ARCHAEOLOGY OF TONGA

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BY

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Archaeology of Tonga

By W. C. McKern

INTRODUCTION

In Tonga, as elsewhere in Polynesia, there is little break between pre- 128
historic and historic culture. The archaeology and ethnology overlap and
blend. The present work, therefore, is a study of archaeological remains 128
which takes the fullest advantage of available traditions, ethnological evidence, 127
and historical accounts that relate to ancient structures.

As a member of the Bayard Dominick Expedition of Bernice P. 114
Bishop Museum, I was afforded the opportunity for a general but careful survey of Tongan archaeology during a period extending from September, 1920, to June, 1921.

The extent of my work would have been greatly lessened but for the 000
active interest and cooperation of Her Majesty the Queen of Tonga and Prince William Tungi, and for the sanction and assistance of the Tongan Government through the offices of the Premier, the Honorable Tui Vakano. My thanks are also due to Mateialona, Kalaota, Solomon Ata, Joele Pangia, Vaia, Tuita, Tamale, Malupo, Matauvave, John Havea, Uhatafi, Malakai Lavulo, Kautai, Fakatava, Mary Valevale, and many other Tongans whose services are no less appreciated. Among European residents who rendered me valuable assistance are Mr. John Clemens, Mr. A. Cunningham, Mr. W. H. Murley, Mr. W. Scott, Mr. A. B. Wallace, Father Deguerry, the Rev. R. C. G. Page, the Rev. Saunders and the Rev. E. E. V. Collocott.

The spelling of native names and terms as used in this paper follows that 128
adopted by Gifford (10, p. 4).

The Tongan archipelago comprises more than one hundred islands. The 133
largest of these, Tongatabu, has a maximum length of about 25 miles. Many of the islands are so small as to call for a statement of size in terms of rods rather than miles.

With the exception of a numerically small chain of volcanic islands, bordering the easternmost margin of the archipelago, Tonga is formed largely of coral rock. Some islands, however, consist of a base of volcanic tuff superficially covered with coral and foraminiferal limestones, and attain not inconspicuous elevations. Eua, for example, is 1,070 feet high. The tallest of the volcanic islands, Kao, attains an elevation of 3,380 feet. Most of the islands, however, are relatively flat and low.

The archipelago is naturally divided into three groups of islands, inter-

[p. 3]
[no pp. 1-2]

133 valed by considerable stretches of water. These groups, from north to south, are Vavau, Haapai, and Tongatabu. Of the three, Tongatabu has the largest land unit in an island which lends its name to the entire group. This island was, culturally and politically, the center of Tongan life.

121 Archaeological investigation, extended to cover as much of each of the
172 three geographical divisions of the Tongan archipelago as available time and
184 the distribution of favorable sites warranted, failed to discover any important
128 differences between the archaic remains found in different islands. This
cultural uniformity renders it desirable to treat the whole of Tonga as a unit in the present report, rather than to give separate archaeological surveys of any sort of geographic subdivisions.

144 The inhabitants of Tonga are, predominantly, full-blooded Polynesians.
161 Probably never much exceeding twenty-five thousand in number, the Tongans have approximately that population today.

An apology is perhaps due for presenting my subject in a form which
128 requires the reader to peruse the entire detailed outlay of evidence in order to obtain a gist of the pertinent facts and the related conclusions. It seems to me that most of the detail is essential to a general understanding of involved problems, and that conclusions, even general remarks, are devoid of meaning when separated from the detail of listed phenomena. I have, therefore, included all the involved data in the running discussion, in order to give the specifically interested student an intelligent, unabridged representation of the field.

172 On first consideration, the archaeological outlook in Tonga is not promising.
114 The student finds here a mottled field, poor in stratified deposits attributable to human sources, but rich in artificial monuments of earth and
114 stone. The greater part of these have not been carefully examined by preceding investigators. Such as have been found mentioned in published accounts have generally been treated as of unknown or doubtful origin.
173 Local mythology has taken full advantage of these wonders and has accounted for their presence in many fanciful ways. There is, however, a much more plausible group of traditions, practically free from dependence upon superhuman agencies, accounting for these structures in a not illogical manner.
173 These traditions, surprisingly consistent in their wide repetition and flatly
114 historical in style, have too frequently been overlooked altogether or purposely disregarded by investigators.

STONE CONSTRUCTION

KIND AND SOURCE OF MATERIALS

In building mounds, platforms, monuments, fortifications, walls, enclosures 333
and miscellaneous structures, the ancient Tongans made large use 172
of stone. The most common structures are masses of loose earth and gravel
supported by retaining walls of both natural and dressed stones. Two kinds 135
of stone were available, basalt and limestone. The basalt is on volcanic 172
islands not conveniently near the larger, more densely populated coral islands;
moreover, it is difficult to work with primitive tools. Though many native 316
stories tell of *makahuna* (volcanic rock) brought from distant islands and 333
extensively used, I saw only a few, small, undressed pieces of basalt forming 172
part of the old structures. Limestone, however, is abundant, easily accessible,
and presents varieties suitable for various purposes. The limestone forming 135
the reef itself is massive, rough, compact, and without cleavage planes helpful 172
to the mason. Though difficult to quarry, it possesses great strength and is the
source of the thick long blocks needed for the largest structures. The kind 316
of limestone commonly used (locally called "sandstone") consists of the lime 135
sand of the beaches blown onto the shore and inland where it becomes consolidated 172
into a stratified rock. Because it is composed of a series of superposed
layers, it is easily quarried and broken into rectangular slabs suitable
for retaining walls

QUARRYING METHODS

Stone quarries are to be found at many places where suitable rock out- 316
crops. Quarries of considerable extent were observed on the islands of 172
Lifuka, Mango, Uiha, and Ualeva in the Haapai group, and on Motutapu
and Pangaimotu in Tongatabu. The largest quarry seen is on the northeast
shore of Motutapu Island, where a bed rock 50 yards in length has been
exposed and intensively worked. The stone slabs obtained from the quarry
were 0.7 foot to 1.5 feet in thickness. Among the largest intaglios marking
the removal of slabs is one which measures 10.5 by 6.3 feet by 0.6 foot,
another, 10 by 6 feet by 0.6 foot, and a third, 9 by 8 feet by 1 foot. On
some slabs, quarrying had been begun but not completed. The information [124]
obtained from these remnants of unfinished work regarding the successive
stages of operations coincides exactly with that gathered from living informants.

The procedure was as follows. An area of desired size and shape was
marked out on the rock surface. Large axes (*toki lahi*), fashioned of basalt [412]
and finished with faces tapering abruptly away from a blunt edge, were then
employed to cut a groove around this outlined area. This groove was carried

316
172 down until a natural plane of lateral cleavage was reached. Wooden poles
483 were then used as levers to lift the loose slab from its bed, and other poles
were slipped under the slab across the cavity formed by the removal of the
172 stone. Skid poles were placed transversely across the path over which the
[316] stone was destined to move, and the slab was started on its way to the building
site by means of tug-ropes and unstinted cooperative man power. Levers
were used at places where progress became exceptionally difficult. The
process of hauling stones overland over skidways was called *makafunualoto;*
172 the officer in charge was called *mailau.* A quarry site on Lifuka Island,
316 Haapai, is shown in Plate I.

TRANSPORTATION OF STONE

172 Stone structures were found on islands where no quarries could be
located, and stone quarries on islands where there are no stone structures.
172 That large stones were carried over considerable water distances is evidenced
by the fact that no stone structures, aside from one small burial cist, was
505 found on Motutapu or on any neighboring island closer than Tongatabu,
whereas stones 6 feet wide and 10 feet long have been removed from the
Motutapu quarries.

505 Living informants give the following account, remembered from the testimony of the preceding generation, of how stones were taken from one island to another:

> [501] The boats, at first the *tungiaki* and later the *kalia,* were large double-hulled sailing
> vessels, bridged with spacious decks, quite capable of carrying heavy loads. The vessel
> 505 was brought as near to the shore as possible without running the risk of grounding, and
> 504 there anchored to stakes set up on the shore. The anchoring place was usually at the
> very edge of a coral shelf, extending outward from the main shoreline, which was submerged at high tide and comparatively dry at low tide. The stone was dragged over
> 505 skids to the edge of this coral shelf. Heavy wooden poles were then placed each with
> 483 one end on the deck of the vessel and the other end crossing the abrupt edge of the coral
> shelf. These served as skids over which the stone was dragged onto the deck, where it was carefully adjusted and balanced, then tied by many ropes radiating from the stone to various parts of the vessel. In removing the stone from the vessel the reverse order was used. Some of the smaller stones were carried by groups of men, selected for their great strength, who placed the stones on the decks of the vessels without the aid of skids.

173 Certain traditions credit a large vessel named *Lomipeau* with bringing
172 stones to Tongatabu from Uvea (Wallis) Island, for use in the construction
of Telea's tomb, *Paepaeotelea* (p. 31). The boat is described as being so
505 large that its hulls passed on either side of the island of Hungatonga, while
the deck swept over the tops of the trees. As all the stones in Telea's tomb are coral limestone whereas Uvea is a volcanic island, it seems that the only possible element of truth in this legend is that some of the stones used in the structure may have been brought from other islands.

STONE DRESSING AND EMBELLISHING

324 333 172 In the best of the Tongan platform structures the stones were roughly shaped to fit the ends of adjacent stones but were not finally dressed until permanently placed in the walls. Then, if they were too thick to conform with adjoining stones, they were carefully sized; rough places were smoothed away and the tops of the walls were reduced to a uniform height. There is ample evidence of this practice in the small flakes of stone scattered about the structures and in the fact that many stones become abruptly thicker below ground, the shoulder being as much as 6 inches wide. Thus the visible portions of the walls were shaped to exhibit smooth, continuous surfaces and contours, while the buried foundations were left with rough surfaces and broken contours.

333 172 No mortar was used in Tongan stone construction. In the rougher structures the undressed stones were placed one upon the other, retaining their positions solely by their own weight and by that of surrounding stones. In the slab walls, which consist of a single row of stones placed upright, each slab was buried for about half its length to insure a reasonable degree of permanency of position. The edges of the stones were laboriously smoothed to make the closest possible contact, the depth of foundation burial being depended upon to make such contacts lasting. [324] The roots of great trees have forced many stones out of position, but the number of slabs undisturbed is remarkable. In some structures a rather half-hearted and experimental effort has been made to scarf or mortise corner stones. In the tomb of Telea (p. 52), corner stones have been given an L shape to prevent spreading.

324 172 531 Aside from a rather neat surface smoothing, which varies in different structures, little was done in the way of ornamental embellishing. On two sides of the tomb of Telea the top of the basal tier is admirably bevelled. Aside from this, the only attempt at decorating stone surfaces is in the incising of petroglyphs, simple geometrical designs, on stones of the remaining walls (p. 78). These rare decorated stones are situated so haphazardly in the structure that they add nothing to a decorative scheme and have therefore little esthetic value.

STRUCTURAL FORMS

MOUNDS AND PLATFORMS

172 34 Although no Tongan mounds are constructed entirely of stone, many mounds of earth have sides faced with stone retaining walls. Most of the mounds take the form of a truncated cone with flat top and sloping sides. Several mounds might be described as foreshortened cylinders terminating in flat tops marked by a large, cylindrical central pit with retaining walls of stone. One mound observed resembles a truncated pyramid with four stone-faced sides, which slope rather abruptly towards the flat top.

172 333 34 The stonework of the truncated cones differs radically from that of the cylindrical mounds. Most of the cone-shaped mounds are surfaced with rough stones piled indiscriminately one upon the other—a sort of cyclopean masonry. In some of these mounds, and in one truncated pyramid, the stones are roughly rectangular slabs. In some of them this technique is marked by smooth stone fitting, the stones exactly shaped and sized to occupy a certain position and to produce a continuous, regular veneering. All of the cylindrical mounds observed are retained by walls constructed after one pattern and of similar materials; rough pieces of limestone are piled one upon the other in a vertical wall of uniform width.

Platforms are of two types; round and rectangular. The rectangular type includes single platforms and storied platforms, or stepped pyramids. All platforms whether single or storied, round or rectangular, are earth filled enclosures retained by walls of upright slabs in contact at adjoining edges. In some of the smaller structures, the slabs are natural flat pieces roughly broken about the edges and but indifferently fitted together. In most structures, however, the stones of the retaining walls are dressed and sized, producing a smooth, unbroken wall of continuously even height, and fairly even thickness.

172 128 34 The distinction between low mounds with flat tops and platforms may seem arbitrary and vague. It is recognized here because of a corresponding distinction made by the native descendants of those who built these structures. The Tongans almost invariably base their nomenclature upon purpose and use rather than upon form or appearance, and it so happens that the term *sia*, which like the English "mound" refers to small elevations both natural and artificial, is generally applied to structures made for certain uses, but is not used to designate the types here described as platforms. Of all the structures observed, only those classified by the natives as *sia* lack the upright slab retaining walls which characterize all other earth and stone structures.

491 172 The tops of some mounds and platforms were made accessible by roadways, or approaches, ascending gradually from the surrounding land—the

length of the roadway being determined by the height of the structure. Most 491
of these approaches were supported on either side by retaining walls, similar 172
to the walls of the main structure. A few were paved with stone slabs or
rough fragments of stone, or surfaced with gravel. Access to certain plat- 172
forms was by means of low stone steps placed at certain points against the 34
retaining walls. Where the low steps adjoin relatively high walls, they seem
merely to have marked the proper place for mounting rather than to have
afforded help in ascending the structure.

STONE HOUSE PARTS

172
Many ancient houses of the better class were supplied with a stone door 342
sill, made or a single oblong, roughly blocked out hexahedron about a foot in
width, which filled the base of the doorway to a height of somewhat less than [333]
a foot. Such stone sills appear in a few modern houses but it is probable
that a wooden sill was always more common.

Stone house posts and rafters were seen in only one structure—a burial 172
house situated on the top of a stone walled tomb on the island of Tongatabu. 764
The fragments now remaining of these stone house parts are smoothly dressed [333]
and show rather elaborate end mortising (p. 38).

STONE WALLS AND MONUMENTS

172
Independent walls of stone are by no means common in Tonga, but are 333
represented by several examples in fairly good condition. All these walls are 34
built of undressed and irregularly shaped pieces of both reef limestone and
"sandstone," of a size easily carried and handled.

Monumental stones form part of the retaining walls of many mounds and 172
platforms. These are placed regularly to constitute a part of the wall and 34
differ from the other wall elements only in their larger size. Usually they
stand up abruptly, at or near a platform corner, to a height considerably
greater than the average height of the wall.

Stelae of undressed basalt occur independent of other structures at certain 172
places. The only one seen is in the town of Mua (p. 93), but two others 349
are reported from the distant volcanic island of Niutoputapu. The great
trilithon, Haamongaamaui (p. 63), situated in the eastern part of Tongatabu.
stands out with paradoxical distinctness from all other Tongan structures, as
well as from those of other Pacific islands. Not only is its shape unique, but [333]
the great size of the three dressed stones employed in the structure, and the
deep mortising of the lintel piece into the uprights, render the work a surprising oddity as well as a worthy monument to Tongan ability and ingenuity
in stone construction.

ARTIFICIAL MOUNDS AND PLATFORMS

CLASSIFICATION

172 34 128 Most ancient Tongan structures of mound or platform type may be classified as belonging to one of four groups: (a) *esi* mounds; (b) pigeon mounds; (c) house platforms, and (d) grave mounds. A few mounds with strong individual peculiarities and a few difficult to identify are, for convenience in presentation, treated as one group, (e) unclassified mounds. In this class are included the very rare stone walled house mounds. In general, this classification is based both on purpose, as recorded by tradition or determined by history, and on structural form. Purpose seems to have determined basic peculiarities in form.

ESI MOUNDS

172 345 [565] An *esi* mound is essentially an area (usually in the form of a raised platform) reserved as a place of resting or siesta for members of a particular chiefly family, or for a particular member of a chiefly family. It was situated at a favorable point commanding a splendid view or frequented by cool breezes, or at a natural resting place intermediate between two important [565] stations of a long journey. The use of these mounds seems to have been connected with the idea, prevalent in Tonga, that the exalted social position of the chieftain should be accompanied by material exaltation, and also, that social superiority involves the privilege of isolation from common contacts.

345 [178] [643] The use of *esi* mounds has survived, to some extent, as a modern complement to ancient tradition. At Vaini, Tongatabu, a rectangular platform which consists of concrete walls enclosing earth and sand, is the *esi* of King George I Tupou, built at his command in the nineteenth century. Small *esi*, consisting of prone coconut logs disposed to retain fills of sand, were observed at various places on the island of Tongatabu and were reported to be in regular use.

345 172 There are two radically different structural types of *esi*, the rectangular and the circular. The most common form is the rectangular platform, of which the poorest are those with retaining walls of coconut logs, perhaps the primitive type. The best examples have retaining walls of dressed stone slabs and attain imposing dimensions. The circular structures, with few exceptions, are retained by walls of undressed stones piled roughly one upon the other, converging toward the top of the mound.

Rectangular platform *esi* were seen in all three of the island groups which constitute Tonga and the finest two circular platforms are in Vavau and Tongatabu—at opposite ends of the Tongan archipelago (pp. 11, 18). The

distribution of *esi*, therefore, is not related to structure. All the circular *esi* 345
observed are apparently of ancient origin, but some of the square *esi* are 172
certainly of quite recent origin. According to this very unsatisfactory evidence, the circular type might be interpreted to be the older of the two.

Tradition, history, field investigation, and comparative study have led to [128]
the classifying of the following mounds as *esi*.

1. Circular mounds on the east side of Euakafa Island, Vavau, at a spot where cool breezes and a fine view are dominant features (fig. 1).

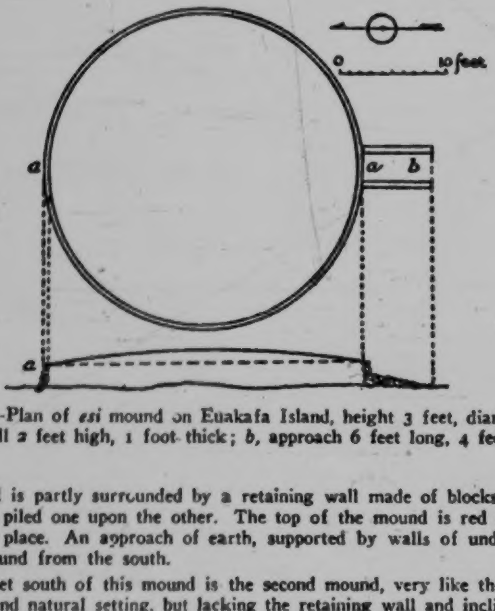

Figure 1.—Plan of *esi* mound on Euakafa Island, height 3 feet, diameter 30 feet. *a*, retaining wall 2 feet high, 1 foot thick; *b*, approach 6 feet long, 4 feet wide.

One mound is partly surrounded by a retaining wall made of blocks of undressed coral limestone piled one upon the other. The top of the mound is red earth brought from a nearby place. An approach of earth, supported by walls of undressed stones, ascends the mound from the south.

About 40 feet south of this mound is the second mound, very like the first in size, general shape and natural setting, but lacking the retaining wall and inclined approach.

2. Mound situated on Kafoa, a hill 420 feet high about 2 miles northwest of Neiafu, Vavau (fig. 2).

Kafoa is a circular earth mound retained by walls of rough coral stones which vary greatly in size. In the approximate center of the top is a slightly oval pit lined with rough coral stones that act as a retaining wall.

From the northwest, an earth road rises from the hill top to the top of the mound. [491]
The dirt sides of the roadway observe an angle of about 45°. Many large toa trees [137]
(*Casuarina*), not indigenous to this locality, are growing about the top rim. Kafoa commands the best view to be had of Vavau and it is said that a cool breeze is to be enjoyed here at all times.

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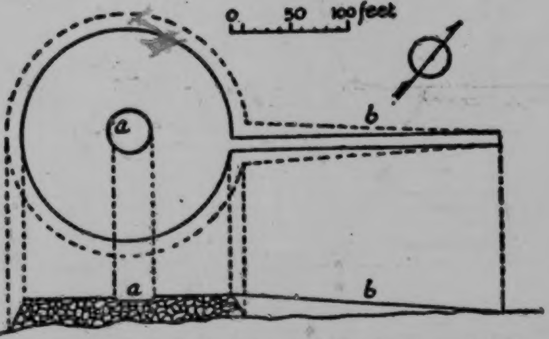
173 The *esi* on Kafoa hill is said to have been built at an ancient date for Kafoa, a son of one of the native kings. One account gives the name of the prince as Kafoamotalau; another (13, pp. 96-98) names two princes, Kafoa and Talau (Kafoamotalau), and states that these royal youths from Tongatabu were visiting in Vavau. Two of their attendants, who had been sent by their masters to Tongatabu to snare pigeons, were unfaithful to their mission and returned to Vavau without the pigeons. To atone for this disobedience, they set about to build an *esi* on the hill which is now called Kafoa. When it was finished, they told Kafoa and Talau of their transgression and of their atonement. The young chieftains were pleased and proposed to race to the *esi*, the winner's name to be applied to the mound. Kafoa won.

345
172



[491] FIGURE 2.—Plan of *esi* mound on Kafoa Hill, Neiafu, Vavau, height 7 to 10 feet; diameter at base 100 feet, diameter at top 85 feet: *a*, central pit about 1 foot deep and 13 feet in diameter; *b*, earth roadway 115 feet long, 6.5 feet wide with a grade of about 10°.

173 (beside "their mission")

173 This story mentions various points of interest apparently associated with
172 the mound, most of the places could not be located. The beach *manutuufanga*
(where the birds stand) is just below the hill; many sea birds were observed
173 to congregate there. Parts of the road *tausia*, ascending the hill from the
172 beach, were identified (p. 89). The *halanukonuka* (road of sweet scented
shrubs) is said to be the road which still follows the crest of the ridge lead-
491 ing up from the interior of the island toward the mound and along which
[137] many flowering shrubs are still to be seen. The *halakavakava* (bridge road)
may refer to the long inclined approach leading to the top of the mound.
173 The artificial mound *tofaki* could not be located. The names of ornamental
172 trees associated with the mound, *tuponahau* (*hau*, king) and *kaincngamofae*
345 (place of eating with mother), suggest that the structure was an *esi*.

There seems to have been many named ornamental trees growing on and 172
about Kafoa. Among these were the great *ake* called Tukungaalofia, the 137
heilala called Mamatataaemaukava (The-onlookers-who-brought-no-kava),
two *hehea* trees called Hafeofafine, a large "almond" called Vakaikaevete
(Look-while-it-is-undone), and a large hala (*fala; Pandanus*) called Kikatenofa (Squeal-and-I-will-stay).

The story mentions a row of eight stones, where pigeon snares were set, 172
as situated near the mound Kafoa and associated with the big *ake* and *tutuna* 173
trees where pigeons were made to fly, and a house called Kolonga situated 345
near the pigeon mound. Neither of these sites, if indeed they ever existed, 342
could be located. The reference is undoubtedly to a pigeon mound (p. 19).

The evidence furnished by these traditions and by the structural peculi- 172
arities of the mound, gives occasion for doubt as to whether Kafoa was an 345
esi or a pigeon mound. The mention of pigeon snaring and the presence
of the central pit on the top of the mound indicates a pigeon mound. The
natives, most of whom consider the mound as an *esi*, explain the presence
of the pit in various ways: the place where a *heilala* tree was planted; the
chief's bathing place; the place where the chief sat; the cooking place; the
site of a house. But they do not satisfactorily explain why a pit should [576]
be constructed in which to plant a tree, why a chief should choose to sit [252]
at an elevation lower than that of his attendant social inferiors (a drastic
breach of Tongan etiquette) or what an oven was doing on a chief's *esi*
(only commoners cooked and they were not permitted to go onto a chief's
esi). The explanation that the pit was a bathing place is reasonable but
savors of rationalization. On the other hand, one informant, who described
the place as a pigeon mound, actually gave a more or less detailed description of how the pit was used for that purpose. In Haapai and Tongatabu
there are mounds of this type intimately associated with typical pigeon
mounds, but some of these are consistently called *esi*.

The place is generally looked upon as an *esi* and the myth relating
of its origin favors this interpretation. It is difficult to understand why a [247]
great number of ornamental shrubs and trees, many of them highly valued
for their fragrant blossoms and some of them actually monopolized in use [565]
by chieftains of high rank, should be planted about a pigeon mound. The
translations of the names of some of these trees: The-onlookers-who-brought-no-kava, Look-while-it-is-undone, Squeal-and-I-will-stay, have no apparent reference here to pigeon snaring. On the other hand, the mention of kava suggests the use of the place for kava ceremonies, associated with *esi*. As for the central pit, there are in Tonga other so-called *esi* similarly equipped (p. 18), although the use of the pit remains unaccounted for.

As a matter of fact, the truth is probably generous to both explanations. The evidence clearly indicates an *esi* and the interpretation of the structure

172 as a pigeon mound also has some foundation. It seems probable that there
345 was a type of *esi* specially used by chiefly persons while visiting favorite hunting grounds. Pigeon snaring from artificial mounds was a chiefly sport.
[223] *Esi* conveniently adjoining the pigeon mounds would permit a chief, at times when active hunting tired or bored him, to sit in a pleasant shade, surrounded by fragrant flowers, and view from his elevated position the activities of his hunting henchmen.

3. Mound on the beach just below the town of Utungake, Utungake Island, Vavau.

This mound, which is said to be an *esi*, consists of a stone wall surrounding three sides of a rectangular area. The fourth side, facing the sea, was destroyed a number of years ago by a hurricane. Previous to that, the stone enclosure is said to have been nearly filled with earth and sand to constitute a platform.

The retaining wall inclosing an area 15 feet by 30 feet is constructed of rectangular slabs of coral stone set on edge, each stone being set about 1 foot into the ground to insure its vertical position. The stones are smoothly dressed and rather sharply edged, although there is no apparent mark of steel tools upon them. They average 0.7 foot in thickness, 2 feet in height above the ground, and range from 2 to 6 feet in length. All stones are of even height with the exception of monumental stones placed one at each corner and one approximately at the center of each side. The seven of these eight stones now standing average 3 feet in height; the highest measures 4.7
[324] feet. They are specially shaped by cutting an ornamental upper edge, some resembling the old-fashioned tablet form of European grave headstones (fig. 3).

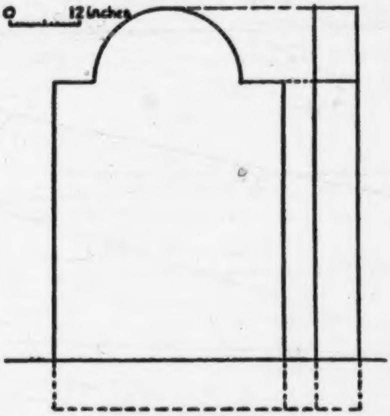


FIGURE 3.—Plan of monumental stone in an *esi* mound near Utungake, Utungake Island, Vavau.

The shape of the mound at Utungake suggests European influence, but the fact that similar forms of monumental stones appear in a ruin on Fanning Island, recently investigated by Emory (7), undoubtedly of Tongan construction, obviates the necessity of assuming outside influence. Old 172 residents of Utungake report that the *esi* was built before their time in honor 345 of a chieftain by the name of Tuita. But as Tuita is a family title rather [173] than a personal name, and there have been Tuitas in every generation for a long time, the name furnishes no information as to the age of the structure.

4. Pitoopapuni (Umbilical-cord-of-Papuni) mound on a hill top on the northeast end of Tofua Island, Vavau.

The mound is 1 foot in average height with a flat circular top 11 feet in diameter. It is made of earth retained on all sides by a circle of rough coral stones. Many [137] toa (*Casuarina*) trees are growing on and about the mound; they are the only ones seen on the island. The site offers a splendid view of the surrounding islands and is exposed to breezes that do not visit the lower places. This mound is described by 172 local residents as the place where the umbilical cord of a chief, Papuni, reputed to 345 have been a prince of the Tui Tonga dynasty was buried.

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The burial of umbilical cords in *esi* mounds, as well as in other types [173] of mounds was a common practice. The original name and purpose of this *esi* was probably overshadowed by the very high rank of Papuni, who became associated with the mound through the umbilical cord ceremony. The [103] renaming of points of interest seems to have been a rather common occurrence.

5. Siakanume (*sia*, mound; *kanume*, possibly derived from *kano*, ab- 172 breviation of *kakano*, the inside or heart, and *mei*, the breadfruit tree, the 345 mound is surrounded by breadfruit trees). The situation commands a fine view of the surrounding islands and sea and faces the cool trade winds. Local informants were agreed that the mound is an *esi* of a former Nomuka [173] chieftain whose name is now forgotten.

Siakanume consists of a circle of dressed, rectangular, coral stones, set up with their long edges uppermost and with ends in close contact with adjoining stones, forming a wall 1 foot high and 0.4 foot to 0.5 foot thick. The circle of stones averages 20 feet in diameter, and encloses an area nearly filled with earth to constitute a level platform. Four monumental stones, each about 2.5 feet in height, rise from the retaining wall to stand respectively at the four approximate cardinal points of the circle. The southernmost of these monuments has the superior corners lopped off so as to form a gently pointed top. Like the stones in the *esi* at Utungake these monumental stones have special shapes, but there is little doubt about the primitive origin of the structure and monuments.

6. Makahokovalu (Eight-stone-pieces) on the northwest shore of the island of Uiha, Haapai.

Makahokovalu *esi* formerly consisted of a rectangular stone enclosure filled with earth to constitute a platform. The side toward the shore is now missing, having been undermined and so destroyed by wave erosion, but some of the large stones originally in the wall lie upon the beach. The remainder of the structure is in fairly good condition, although the flat top is entirely covered with a thick tangle of trees and brush (fig. 4).

The three walls remaining are composed of large, smoothly dressed, rectangular slabs of coral reef limestone which have an average apparent height of 3.7 feet, an

172 average thickness of 0.9 foot and an average length of 10 feet. The largest stone in the wall is 17.1 feet long, 1.2 feet thick and stands 3.7 feet above the ground. The 345 outer edge of a stone in the southernmost wall has been exposed by the action of the waves so that its entire height is visible. Of its total height (5.6 feet), 2.8 feet were formrly above ground and 2.8 feet below ground. Judging from this approximately half of each stone in the retaining wall is buried as a foundation. Thus some of the stones must be very large.

The stones are carefully dressed on either end so that the flat end surfaces meet snugly. Surfaces and edges are smooth and straight. The corner stones are lapped evenly, no rule being observed in regard to which stone is outside in the lapping. No existing corner angle is a true right angle.

The surface of the stone is soft enough to permit figures to be scratched or chiseled 172 by means of any reasonably hard, pointed instrument. Incised figures appear on many

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[324]

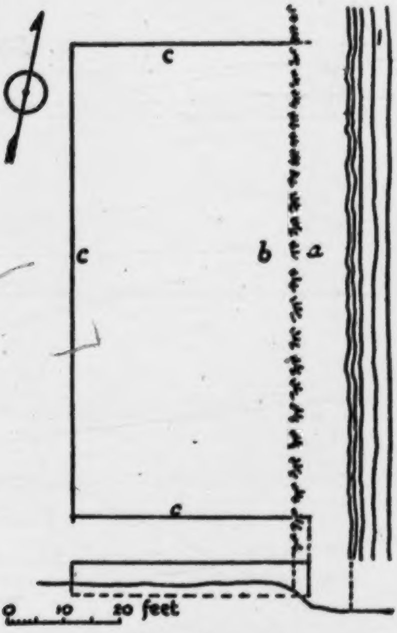

FIGURE 4

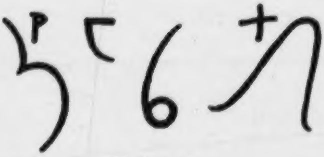

FIGURE 5

FIGURE 4.—Plan of the *esi* Makahokovalu, Uiha Island, Haapai: *a*, beach; *b*, precipitous shore line; *c*, stone retaining wall inclosing a platform 81 feet long and 39 feet wide.

FIGURE 5.—Reproduction of pictographs at the *esi* Makahokovalu.

[324] stones but are especially numerous on the two stones comprising the northwesternmost corner which are largely covered with incised English letters giving the initials and entire names of Tongans. On the westernmost of these corner stones is also a row

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of curiously curved and crossed lines that certainly cannot be even the poorest of repre- 345
sentations of English letters (fig. 5). A young Tongan, who was present at the time 212
of my visit readily identified these figures as shorthand characters, such as are taught at the Government and Wesleyan colleges at Nukualofa. They are patently modern markings.

Professor Wragge of Auckland is reported to have identified Maka- 172
hokovalu as a religious site connected with the sun worshipping practices 345
of the primitive Tongans. I have failed to find any archaelogical evidence 346
of sun worship, and Gifford (12) reports the absence of any evidence that 114
sun worship was ever practiced by the Tongans. In spite of reports to the contrary, the mound is not intentionally orientated except with reference to the shoreline.

Makahokovalu shows the finest structural workmanship seen in Tongan 172
esi. There are more imposing structures from a standpoint of size, particu- 345
larly height, but in size of the stones in the retaining walls and the degree 764
of skill in masonry, they compare favorably with the best executed langi platform tombs of the ancient Tongan rulers. In fact, this *esi* would be an excellent example of a one-tier langi except for the absence of fine sand or black pebbles, characteristic of the grave mounds. The place is actually referred to as a tomb in one myth recorded by Gifford (13, p. 68).

The name Makahokovalu may possibly be derived from an original 172
number of eight large stones constituting the westernmost wall, only six 345
of which are now in place. No other arrangement of eight stones could
be found. In this connection it should be noted that eight seems to have 172
been a favorite number to associate with mounds. For example, Lefelefevalu 345
(Eight-sexual organs, p. 30): Kafoa, eight-stones at Kafoa (p. 11); Siaha- 801
lavalu (Mound-of-eight-roads). However, in no one of these three structures was the number eight descriptive of structural peculiarities. It is suggested that the number eight, when so used, may have been a conventional term signifying many, or a well balanced number, and had no numerical significance.

7. Mangafakinanga, near Kolonga, Tongatabu. 172

The *esi* of Mangafakinanga consists of a rectangular mound with a convex upper 345
surface, surrounded by a low perpendicular wall of dressed coral slabs placed on edge
and end to end. It is said to have been the *esi* of the Tui Tonga Tuitatui, a famous [173
ancient Tongan monarch generally accredited with the building of the great trilithon 643]
(p. 63). The structure is 35 feet long, 21.5 feet wide, and is 3 feet high. The retaining walls average 1 foot in height and 0.7 foot in thickness. Most of the stones of the south wall have been removed in comparatively recent times. The wall stones are about 3 feet long. All stone surfaces are rather smoothly dressed and componant parts of the wall fit snugly together. Corner pieces are lapped with no apparent regard as to which piece is outside. The westernmost wall extends in a direction N. 20° E.

Near the northeast corner of the mound and rising from the retaining wall, is a large monumental slab which measures: length above the ground 8.3 feet, width, 5.9 feet, thickness 1.4 to 2 feet. Though leaning inward at an angle of 75° from the

172 horizontal, its original position probably was vertical. Tradition defines this slab as
345 the back rest of the king when seated upon the mound.

8. Siumafuauta, east of Maofanga, Tongatabu, 250 feet from low tide
172 mark near the point of land called Tukutonga. It is described by Cook
345 (4, vol. 1, p. 289) in the following words:

> 175 At this place is a work of art, which shows, that these people are capable of some design, and perseverance, when they mean to accomplish anything. This work begins on one side, as a narrow causeway, which, becoming gradually broader, rises, with a gentle ascent, to the height of ten feet, where it is five paces broad, and the whole length seventy-four paces. Joined to this is a sort of circus, whose diameter is thirty paces, and not above a foot or two higher than the causeway that joins it, with some trees planted in the middle. On the opposite side, another causeway of the same sort descends; but this is not above forty paces long, and is partly in ruin. The whole is built with large coral stones, with earth on the surface, which is quite overgrown with low trees and shrubs; and, from its decaying in several places, seems to be of no modern date. Whatever may have been its use formerly, it seems to be of none now; and all that we could learn of it from the natives was, that it belonged to Poulaho, and is called Etchee.

172 Siumafuauta stands on level ground, practically in a mangrove swamp
345 called Tafaloto, at a place where the swamp merges with the lagoon.

> The structure is a circular, flat-topped mound 18 feet high and 100 feet in diameter
> at the top. The walls are of rough though smoothly piled pieces of coral stone, and
> 172 stand at an angle of about 80° from the horizontal. From the southwest an inclined
> road 24 feet wide and 140 feet long leads to the top of the *esi*. A similar inclined
> 345 approach ascends from the east. From the top of the mound the road extends 137 feet
> 491 with a width of 27 feet, then turns northward for 20 feet with a width of 12 feet
> (Pl. II, *C*). Both approaches have stone faced sides exactly like those of the mound
> proper, and are paved with coral gravel. Near the center of the flat top is a circular,
> 172 flat-bottomed pit 22 feet in diameter and 0.9 foot in depth, walled on the sides with
> 345 vertical slabs of crudely dressed stone. Individual stones in this ring do not exceed
> 3 feet in length and are from 0.4 foot to 0.7 foot in thickness.

Except in type of elevation, Siumafuauta resembles Kafoa and, like
Kafoa, is the center of controversy as to its original intent and use. Some
[491] native residents refer to it as an *esi;* others, as a pigeon mound. Those
explaining it as a pigeon mound cite as evidence the central pit and the presence of undisputed pigeon mounds in the immediate neighborhood which seem formerly to have been connected to Siumafuauta by roads paved with coral gravel.

173 On the other hand, an old tale has it that the Tui Tonga Pau, one of the
later kings of the ancient dynasty, came to dwell at the point called Tuku-
172 tonga in order to superintend the building of a proposed causeway crossing
345 the lagoon to Mua, the traditional capital of the Tui Tonga. His sister,
[342] the Tui Tonga Fefine, whose name was Siumafuauta, came with him. The
king then built the large mound as a foundation of a house for his sister

who lived there until Pau died and the causeway project was abandoned. 173
This narrative does not account for the central pit of the mound (Tongan 172
houses did not have pits within them), nor does it explain why the Tui 345
Tonga Fefine should have had such a grand foundation for her house at 342
this place of temporary dwelling, while neither she nor any other Tongan
was accustomed to large elevated platforms at their places of permanent
residence. There is no evidence on the Tukutonga side of the lagoon of 173
the causeway said to have been begun by Pau and if there is any foundation 172
of truth to the story it seems more probable that a mound, already in 345
existence, was selected as a suitable site for the house of the Tui Tonga
Fefine on account of the low, wet ground. But this does not explain the
purpose for which the mound was originally built. Cook says definitely [175]
that it was called an "etchee" *(esi)* belonging to the Tui Tonga of his time, [643]
Poulaho, and that it was of "no modern date," which information sheds
no light upon the builder or the original use of the structure. It is here
classed with *esi* because of its remarkable similarity to Kafoa. It may be
that some mounds, originally built as pigeon mounds, were converted through
use into *esi*.

PIGEON MOUNDS

CLASSIFICATION

Pigeon mounds or *siaheulupe* (*sia,* mound; *heu,* pigeon snare; *lupe,* 172
wild pigeon), are natural structures, artificial structures, or artificial structures 345
situated upon natural risings exclusively employed by chiefs and their 223
retainers as places to which wild pigeons could easily be decoyed and 565
snared.

Men of less than chiefly rank often snared pigeons for food using the *heu,* a large, two poled net which did not necessarily involve the use of any sort of mound. But pigeon snaring as participated in by chieftains was a highly organized sport for which the mound was deemed essential. As a matter of fact, the practical purpose of the mound is not altogether clear, unless it furnished the wielders of the *heu* net an increased elevation, and so increased their reach.

In describing the method of snaring pigeons, informants speak of two 172
types of mounds. Type I, present in all provinces where pigeon mounds 345
were located, possessed two essential features: (a) a circular platform of 223
stone, or of earth, supported by stone retaining walls, rising several feet 128
above the surrounding ground; (b) a centrally located pit averaging 20
feet in diameter, as deep as the artificial mound was high, and laterally
lined with perpendicular retaining walls of stone.

7: McKern A-4,5 (1920-1921) 1929 OU9 Tonga OU9

172 345 223 Briefly, the mound was used as follows: The sportsmen occupied the structure, some on the mound surface where they manipulated the *heu* poles, and some in the pit to take the pigeons from the snare. Captive pigeons, attached to long cords, were allowed to fly among the tree tops above the mound where they served as decoys to attract their wild kin. When the wild pigeons came, lured by the calls of the decoys, the *heu* manipulators dropped the net over them and brought them down into the pit, where they were caught and disposed of by the men assigned to that task.

The mounds of Type II lacked the large, deep, central pit of Type I. In its place was a depression 15 to 20 feet in diameter and seldom more than 1 foot in depth. One informant explained that the *heu* manipulators lay prone in these depressions, but such an explanation, unsupported by corroborative testimony, is of doubtful value. No good argument offers itself to show the practical necessity for a pit of any character in such structures, but the shallow type of pit seems especially useless. These shallow pits might be regarded as more or less useless survivals of the more archaic, deeply pitted mounds, but no evidence for such an assumption is apparent. In the following descriptions of pigeon mounds only artificial ones are included. 172 345 [128]

MOUNDS IN VAVAU

1. Kaufotutata, on the eastern outskirts of the town of Utungake, Utungake Island, Vavau, Type I.

Kaufotutata stands on a natural rising overlooking the sea to the north. Its measurements are: diameter at base, 100 feet; diameter at top, 80 feet; height, depending upon ground contour, 3 to 7 feet. Its sloping sides are faced with a compact layer of rough coral stones. The pit, originally about 19 feet in diameter and 4 feet deep, has recently been filled to allow a house to be built. Its sides are vertically walled [491] with stones like those used in the outer wall. From the south, a dirt road 20 feet long and 6 feet wide leads to the top of the mound. The stone work of the mound is continued along the road with similar slopes. This pigeon mound was built, according to tradition, by a prince of the Tui Tonga family named Moka.

Other pigeon mounds are reported from Vavau, but these were not located, unless Kafoa (p. 11) served at times in that capacity.

MOUNDS ON UALEVA

[223] Judging from the number of pigeon mounds, the island of Ualeva, Haapai, must have had at one time an enviable reputation as a place for [173] pigeon snaring. Local informants agree that these were built by Matauvave I, who was the first known administrator of Haapai to be appointed by the Tongan kings. Geneological evidence places the time for his assuming this office at about 1540-1550 A. D.

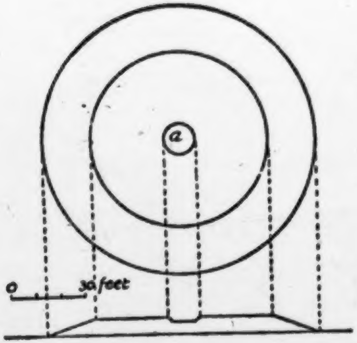

FIGURE 6

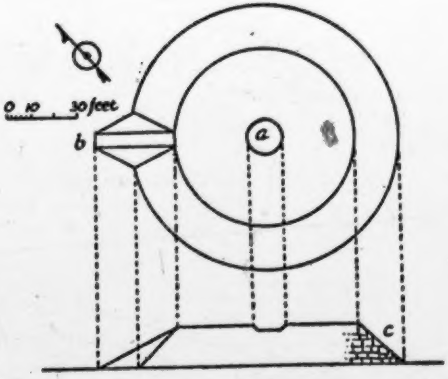

FIGURE 7

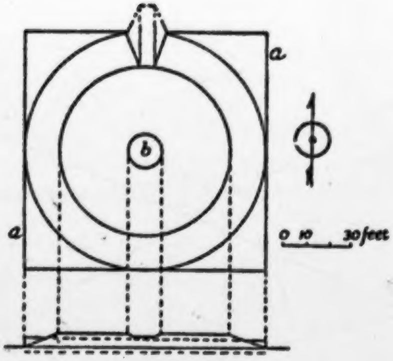

FIGURE 8

FIGURE 6.—Plan of pigeon mound Finevalafililolo, Ualeva Island, Haapai, height 7 feet, diameter at base 105 feet, diameter at top 75 feet: *a*, pit on top, diameter 14 feet, depth 1 foot, slope of sides 30°.

FIGURE 7.—Plan of pigeon mound Siaulufotu, Ualeva Island, height 17 feet, diameter at base 115 feet, diameter at top 75 feet: *a*, pit on top, diameter 15 feet, depth 1 foot, slope of sides 30°; *b*, approach, length 35 feet, width 6 feet, slope of sides 40°; *c*, veneer of stone work.

FIGURE 8.— Plan of pigeon mound Tulikitauha, Ualeva Island, height 5 feet, diameter at base 104 feet, diameter at top 74 feet: *a*, rectangular retaining wall; *b*, stone walled pit 12 feet in diameter, 1 foot deep; *c*, approach 20 feet long, 6 feet wide.

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128 The following descriptions include all of the pigeon mounds which a
172 thorough survey of the island could discover. The accuracy of the names
345 cannot be vouched for, as they were supplied by a single informant, the only
[124] man found who professed to have any knowledge of the names. Three mounds, Nos. 8, 9, and 10, are classed as pigeon mounds because closely associated with structures known to be pigeon mounds. Native informants were of the opinion that they were used by the pigeon snarers in some capacity, possibly as temporary dwelling sites for the chiefs engaged in the sport. They are like the pigeon mounds which they neighbor except for the absence of any trace of a central pit or basin.

172 2. Finevalafililolo, in central southern Ualeva, Type II (fig. 6).

345 Finevalafililolo is composed of a mixture of sand and earth. The centrally placed pit has retaining walls of dressed rectangular slabs of coral stone averaging 3.5 feet in length, 0.7 foot in thickness and standing 2 feet out of the ground. The flat floor of the basin is of earth. The mound is surrounded at irregular intervals by ten funnel-shaped pits averaging 10 feet in depth and 25 to 30 feet in diameter, situated from 25 to 75 feet from the mound base. They are said to have furnished the earth from which the mound is constructed.

3. Siaulufotu, at the south end of Ualeva Island, Type II (fig. 7).

The sloping sides of Siaulufotu are surfaced with stone work consisting of an inner base of rough, loosely piled fragments and an outer coating intact only in places, of rectangular, roughly dressed slabs laid flat, their edges fitting together haphazardly (fig. 7, *c*). These slabs are 2 to 6 feet long, 1.5 to 4 feet wide and 0.3 foot to 0.5 foot thick. The largest slab in place measures 6 by 4 feet by 0.5 foot. The central depression is surrounded by rectangularly dressed slabs of stone averaging slightly more than 3 feet in length, 0.6 foot in thickness, and which stand 2 feet above ground and
[491] 1 foot below the bottom of the flat earthen floored basin. A steeply inclined dirt roadway from the northwest leading to the top of the mound is paved with rough stones of varying sizes, their flat sides turned upward to make a comparatively smooth surface.

[351] Siaulufotu is entirely surrounded by a ditch or series of connected pits, 30 feet wide and 12 feet deep, which stands 40 to 50 feet from the mound base. It is thought to have furnished earth for the construction of the mound. Near the northernmost
172 base of the mound is a flat bottomed well called Vaisioata (Water-mirror). Its walls
312 are of loose, roughly piled stone and slant outward from the base at an angle of about 15° from the perpendicular. The rim of the well is 8 feet in diameter and the depth 3 feet, of which 1 foot is under water. The bottom appears to be partly filled with loose
172 debris. About 50 feet east of the mound was found a quarry site where stone for the structure may have been obtained. At this place about a foot of surface soil had
316 been removed, exposing coral "sandstone" which has been cut through in a way to suggest the removal of rectangular slabs.

172 4. Unnamed mound, Ualeva Island, Type II.

345 This mound consists of a circular pile of earth with a horizontally flat top. It is 3 to 4 feet high and has a base diameter of 82 feet and a top diameter of 72 feet. The earthen floor of the basin is horizontally flat. Its sides are supported by dressed rectangular slabs of stone practically all the same size, about 3 feet long, 0.6 foot thick, and 2 feet out of the ground. Several large funnel-shaped excavations near the mound probably indicate the source of material for the construction.

5. Tulikitauha, on Ualeva Island, Type II (fig. 8). 172

Tulikitauha is a flat-topped circular pile of earth. The centrally located basin 345 has marginal walls like those of the other mounds on Ualeva. This mound is unique in that it is surrounded by a stone wall about the base, which outlines a square area. Many of the stones have apparently been removed, but enough remain to outline a rectangle with sides tangent to the mound base. The stones used are dressed, rectangular slabs set up on edge and in contact end to end. The largest is 3 feet long, 0.8 foot thick, and stands 3 feet above the ground. The other stones are only slightly smaller, all of an even height. Upon excavation, the base of one stone proved to be 2.5 feet below ground. The remains of what was undoubtedly an inclined earthen approach ascending the mound, is to be seen on the north side of the structure. Its exact original dimensions could not be determined. The many large, funnel-shaped pits scattered about the mound average 7 feet in depth and 20 feet in diameter.

6. Tunueteikakaekaietefeke or Tunuetefekekaekaieteika. I could not find a mound of this name said to be on Ualeva Island. It may be one of the unnamed mounds.

7. Siatoloke on the southwest end of Ualeva Island, close to the seashore, Type II (fig. 9).

This doubtfully identified mound is circular, flat-topped, and is approached by two [491] sloping roadways. The sloping sides of both mound and approaches are made of stone slabs of various sizes, most of them so small as to be conveniently handled by one man. Although not dressed, each stone has parallel flat surfaces due to natural bedding. The stones paving the sides of the mound proper are piled with flat surfaces together and outer edges matched to constitute a smooth surface parallel to the slope of the structure (fig. 9, *e*). Both the top of the mound and the inclined approaches are covered with a mixture of flat slabs of all sizes and rough stones, which forms a fairly smooth pavement. A large, flat, stone slab of irregular outline marks the top and bottom of the [491] paved roadway of each of the ascending approaches.

8. Siamaka (Stone-mound, probably a recent appellation), in the central southern part of Ualeva Island (fig. 10).

Siamaka is a circular structure fashioned from rough, naturally shaped, coral stones of varying sizes, piled loosely but with some idea of maintaining a smooth exterior surface. It is probable that only the exterior surface of the mound is of stone, as there are a number of sizable excavations adjoining the mound where material may have been obtained for building the structure. The flat top has no central pit nor other special feature except a stone pavement. It is now entirely overgrown with brush and trees.

9. Siakape, a short distance to the southeast of Finevalafililolo (No. 2).

Siakape is a circular, flat-topped earthen mound, without a central basin or pit in the top. It is 15 feet high and has a diameter at the bottom of 125 feet, and at the top of 65 feet. Like similar mounds, it is surrounded by an irregular circle of funnel-shaped pits which average 10 feet in depth and 30 feet in diameter and are placed 50 to 100 feet from the mound base.

10. Unnamed mound on Ualeva Island (fig. 11).

This mound is a circular, straight-sided, flat-topped, earthen structure without a pit or basin on the top. Inclined roads ascend to the mound top, from the northeast

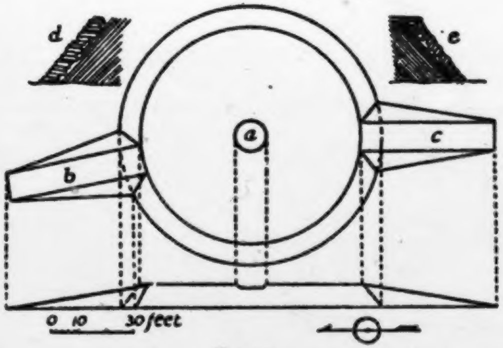

FIGURE 9

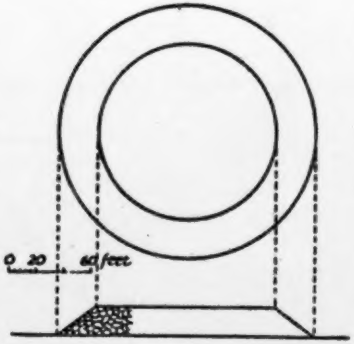

FIGURE 10

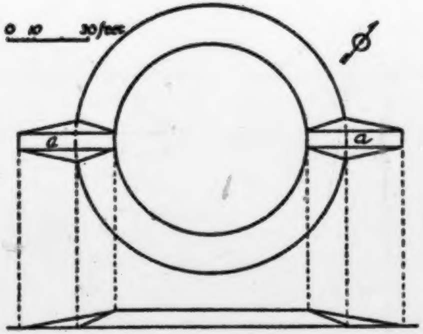

FIGURE 11

FIGURE 9.—Plan of pigeon mound Siatoloke, Ualeva Island, height 8 feet, diameter of base 94.7 feet, diameter of top 80.7 feet: *a*, pit, 12 feet in diameter, 1 foot deep; *b*, ramp, 11.4 feet wide; *c*, ramp, 11.9 feet wide, slope of sides 39°; *d*, cross section of ramp showing structure; *e*, cross section of mound showing structure of retaining wall.

FIGURE 10.—Plan of pigeon mound Siamaka, Ualeva Island, height 10 feet, diameter at base 95 feet, diameter at top 65 feet.

FIGURE 11.—Plan of unnamed pigeon mound, Ualeva Island, height 6 + feet, diameter of base 100 feet, diameter of top 70 feet: *a*, earth ramps 35 feet long.

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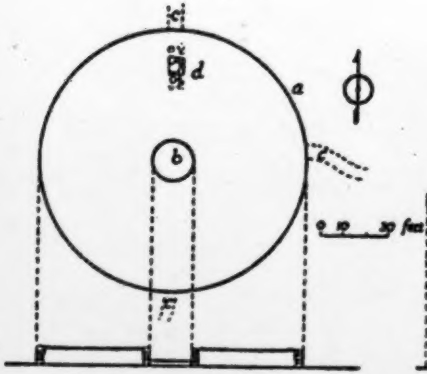

FIGURE 12

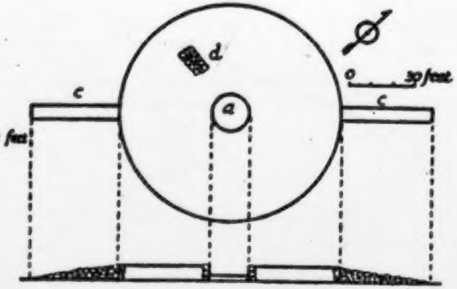

FIGURE 13

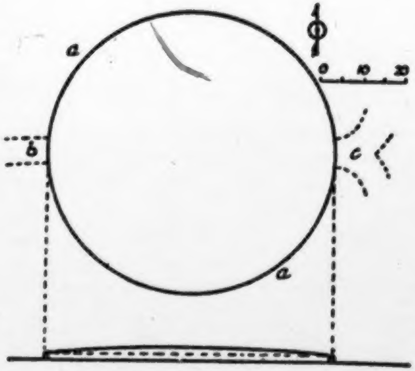

FIGURE 14

FIGURE 12.—Plan of pigeon mound Siaheulupe, Tongatabu, height 5-6 feet, diameter of base 119 feet: *a*, outer retaining wall of stone; *b*, central pit 19 feet in diameter, 4 feet deep; *c*, gravel roads leading from mound base, 6 feet wide; *d*, remains of stone pavement on platform top.

FIGURE 13.—Plan of unnamed pigeon mound, Tongatabu, height 6.5 feet, diameter of base 100 feet: *a*, central pit 18 feet in diameter, 4 feet deep; *b*, outer retaining wall; *c*, stone ramps; *d*, pavement-like structure on platform.

FIGURE 14.—Plan of pigeon mound Siamoatao, Maofanga, Tongatabu, height 3.5 feet, diameter at base 65 feet: *a*, stone retaining wall; *b*, *c*, gravel roads leading from mound base.

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172 and from the southwest. The mound is surrounded by series of connected, funnel-
345 shaped pits, averaging 20 feet in diameter and 8 feet in depth.

MOUNDS ON TATAFA, NUKUNAMA, AND HAANO

In the Haapai group Matauvave I is said to have built a pigeon mound on the island of Tatafa. Other pigeon mounds which were not examined are reported as situated on the islands of Nukunama and Haano. A mound on Haano near the town Muitoa, is called Siakotoloke.

MOUNDS ON TONGATABU

The only pigeon mounds observed on Tongatabu are situated east of the town of Maofanga, south of the Tukutonga point, in the mangrove swamp called Tafaloto.

11. Siaheulupe (Pigeon-snaring-mound). Type I (fig. 12).

About one-fourth mile southwest of the mound Siumafuauta (p. 18). Siaheulupe is a circular, flat-topped platform, with a vertical outside retaining wall built of closely piled fragments of rough stone. The walls of the centrally placed circular pit are identical in shape and structure to the outside retaining walls.

172 Three roads lead away from the foot of the mound. Each consists of two parallel
rows of rough stones averaging 1 foot in thickness, between which is a fill of coral
491 gravel several inches deep. The roads wander about in a haphazard fashion and disappear for considerable stretches where high tide water has washed the materials away. One road extends north to the sea, another extends east and entirely disappears at a distance of about 200 yards. The third road extends south for a short distance before
[345 disappearing. In line with the north road the top mound surface is marked by a pile
of stones that suggest a pavement between the central pit and the outer wall. No similar paved areas are to be seen in line with the other two roads.

172 12. Unnamed mound about 835 yards south of Siumafuauta, Type II
345 (fig. 13).

In most respects this mound is exactly like Siakotoloke (No. 7), and the coral
172 paved roads approaching the two mounds are similar. The southwestern road disappears
491 soon after leaving the mound. The northeastern road can be followed for about 300
yards before it is lost in the tide washes of the swamp. Upon approaching the mound
[345 these roads rise to its top surface, along gradual inclines about 40 feet long and retained
by stone walls exactly like those supporting the sides of the mound. West of the central
172 pit is a bed of large stones entirely out of line with the roadways and more like a
345 filled depression than a pavement (fig. 13, *d*). It can best be described as a roughly rectangular hole nearly filled with large stone fragments. A close examination disclosed no evidence of fire.

13. Siamoatao, 380 yards south of the mound Siaheulupe (fig. 14).

Siamoatao is a circular mound and has a gently convex top surface. The surrounding perpendicular wall of rough, loosely piled stones is only 1.7 feet in height but the
172 mound is 3.5 feet high at its center. Two roads, paved with coral gravel, approach the
mound without inclining upward to its level. The western of these roads divides im-
491 mediately upon leaving the mound, one branch curving towards the south, the other

towards the north. Both of these branches can be traced for several hundred yards 172
of meandering course before they become too indistinct to follow. A second road extends 491
eastward from the mound for a short distance and then disappears.

There is no central pit or other surface peculiarity on Siamoatao, which 172
brings to mind the similarly pitless mounds on the island of Ualeva (Nos. 345
8, 9 and 10). The suggestion that such mounds may have been temporary abodes of chieftains engaged in pigeon snaring is here repeated as no other explanation is known.

The roads associated with these mounds probably served to furnish dry 172
access to them across the surrounding swamp. Their technical structure con- 491
stitutes a unique feature not observed elsewhere in old Tongan roads (p. 89).

UNCLASSIFIED MOUNDS

1. Tuavavau, several miles northwest of the town of Utungake, on the 172
island of Utungake, Vavau (fig. 15). 34

According to a tradition recorded by Gifford (13, p. 202), Tuavavau was
the name of a beautiful girl who lived on this mound. The story is that many 172
lovers camped about the mound where they could often see her. Among 34
these was the great chieftain Tuilakepa. Finally their unsought attentions 172
drove the girl to distraction and she leaped over the cliff into the sea. There 34
is said originally to have been a circle of small mounds about this structure, 173
the sites for the houses of the many lovers. None of these mounds could be
located. Intensive agricultural pursuits about the place may well have de- 172
stroyed them, if they ever really existed. 34

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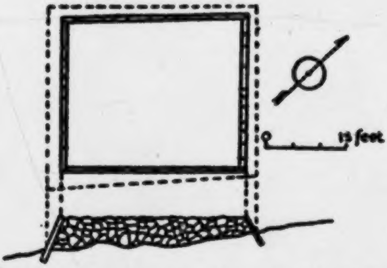

FIGURE 15.—Plan of Tuavavau, Utungake, Utungake Island, Vavau, height 2 to 6 feet, length at top 35 feet, width at top 29 feet.

Tuavavau is an artificial rectangular structure, built upon a rocky elevation near the shore commanding an excellent view of the surrounding country. The entire mound is solidly built of undressed slabs of coral "sandstone," save for a surfacing which consists of a row of dressed rectangular slabs set up on edge along the sides which stand at a slope of about 70°. The straight sides of the platform are placed quarterwise with

172 34 the compass. Many of the undressed stones in the body of the platform are sufficiently large to require several strong men to move them. Most of the dressed surface slabs have been removed recently to build a wall about the Wesleyan church at Utungake. The only large one left in place measures 5.2 feet in height, 2.7 feet in width and 0.7 foot in thickness.

172 34 333 This square structure with its sloping, slab-surfaced sides is a form of stone masonry not at all characteristic of Tongan work. Its whole character seems more in harmony with Fiji and I am inclined to believe that this is the foundation for some important building erected directly under Fijian influence, if not actually by Fijians.

172 2. Unnamed mound on the island of Mango, Haapai (fig. 16).

34 The mound is circular and flat topped, standing close to the beach at the west end of the village. It is immediately surrounded by a very shallow ditch or depression,

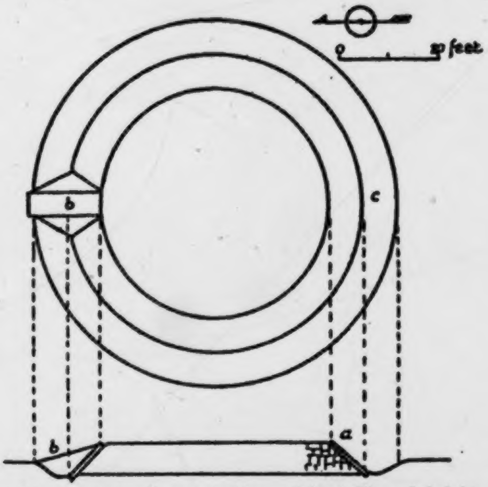

Figure 16.—Plan of unnamed mound, Mango Island, Haapai, height 5 feet, diameter at base 90 feet, diameter at top 70 feet: *a*, stone veneering on sides sloping about 25°; *b*, earth ramp ascending mound; *c*, moat 3 to 5 feet wide at base of mound.

crossed from the north by a fill of sand which is projected to constitute an inclined approach to the top of the mound. The sloping sides of the mound are faced with irregular flat slabs of coralline sandstone laid loosely, like tile.

172 34 173 [342] The structure is said to have been built as a house platform by Fijian warriors, brought to Mango by the Tongan king Ulukalala I, who is referred to by Captain Cook as Feenow (Finau). Whatever its original purpose, this structure is now used as a house mound, although entirely out of keeping with other Tongan *paepae*. It has certain strong Fijian features which seem

to confirm the traditional account of its construction. Tongans who have 172
been in Fiji assert that they have seen there house mounds exactly like this. 34
On the other hand, the detail of construction is very much like that of some [173]
of the pigeon mounds on Ualeva (p. 21). Fijian influence may have been
active in both places.

3. Group of mounds in the village of Malapo, Tongatabu, on the Nukualofa-Mua road.

This group includes several peculiar mounds that seem to be subject to much speculation by the inhabitants of the village. Not even their names could be ascertained.

In a row of mounds bordering the north side of the road, the first is a very large structure, the next much smaller and the others progressively smaller; the last being difficult to distinguish from the natural features of the surrounding country. At least four of these mounds are worthy of consideration.

The large mound is conical in shape with a gracefully rounded top. It is 18 feet
high, 100 feet in diameter at the base, and the slope of its sides is about 25°. From
all surface indications, the mound is composed entirely of earth and has no outstanding
features other than its bulk. The remaining three mounds, 4 to 6 feet in height, are [342]
more oval in cross section. They are the present sites of houses.

An old man, not resident in the village, gave to the series of smaller 172
mounds the name Afoteau (*afo*, a length of sennit-cord; *teau*, one hundred). 34
This name is said to have originated from the fact that one hundred lengths 173
of sennit cord were required in erecting on one of the mounds a house built [342]
by the chieftain Fasiapuli, the brother of Tuitatui, who, according to genealog-
ical evidence, was king of Tonga in about the twelfth century. The place
where these mounds stand is referred to in a mythological account which
Gifford (11) obtained, as Haangongo (the family of Ngongo). The smaller 172
mounds may be house mounds, but both the size and the shape of the large 34
mound are against such an interpretation. Nor has it the appearance of a [342]
grave mound.

4. Two mounds on either side of the Mua road at Holonga, a village near Malapo.

These very large mounds greatly resemble in size and other characteristics the large
mound at Malapo. They are mythologically accounted for as composed of the earth [173]
which Muni shook from the roots of the kava plant (13, p. 121). The absence of any
historical account of origin may indicate a considerable antiquity.

5. Hauomomo, or Paepaeomomo (*hau*, a king other than the Tui Tonga; *o*, of; Momo, name of the first traditional king of Tonga; *paepae*, house platform), at the village of Haameniuli, Tongatabu.

Hauomomo is said to be the house mound of Momo, descendant of the worm, pre- [173]
ceding the heavenly advent of the first Tui Tonga (13, p. 25). Its interior, exposed
by a road cut, is of the same kind of earth as that of the surrounding surface soil.
Nothing of special importance was found there.

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6. Mound on the island of Euakafa, Vavau.

This structure is a rectangular platform of earth retained by walls of dressed, rectangular slabs of stone which are set up on edge and in contact end to end. It is 32 feet long, 28 feet wide, and about one foot high. Judging from size, proportions, and position, this mound was a house platform. This platform stands less than a quarter of a mile west of Talafaiva's langi (p. 49), on the same high platform which constitutes the entire top of the island, and some informants identified it as the house *paepae* for the residence of the chieftain Talafaiva. This is the only known rectangular platform in Tonga described as a house platform, with the possible exception of Tuavavau (No. 1). These two structures are similar in no other respect.

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7. Mound platform on the island of Namukaeiki, Haapai.

The mound on Namukaeiki is a low, stone walled rectangular platform of earth retained by walls of roughly dressed stone slabs disposed on edge and in contact end to end. [342] [764] It is 30 feet long, 20 feet wide and 1 foot high. It was reported to be a langi, but Gifford (11) describes it as more resembling the so-called house *paepae* on Euakafa. The dimensions are certainly not those of a langi, if comparative data are of any value, but seem to be exactly suited to a house platform. On the other hand, it may be an *esi*.

8. Lefelefevalu (*lefelefe*, sexual organ; *valu*, eight), on the island of Eua, a short distance north of the village of Tufuvai.

Lefelefevalu is a large conical mound made entirely of earth, with a basal diameter of 150 feet. The sides slope upwards, at an angle of about 22°, to a flat top 25 feet in diameter and 22 feet above the base. Scattered about the centrally placed large mound at distances of 100 to 200 feet and with no apparent order, are five small mounds 4 to 5 feet in height and averaging 20 feet in diameter. There are reported to be eight of these smaller mounds but only these five could be located.

172 34 173 Little is known about Lefelefevalu, but a myth accounts for its supernormal origin in which the goddess Lefelefevalu and her eight lovers are the principal actors. The myth would seem to be a rationalized explanation of the origin of a phenomenon concerning which no true information remains. The story is more than symptomatic of that associated with the mound called Tuavavau (p. 27). It seems probable that the two stories are local renditions of one of those standardized myths, so common in Polynesia, that attach themselves to any favorable site that seems in need of explanation.

GRAVE MOUNDS

CLASSIFICATION

172 764 There is a threefold native classification of primitive burial places in Tonga. The mound marking the burial of an ordinary man is called *tanuanga*, that marking the burial site of a chieftain, his family and his principal retainers is called *faitoka*, and that in which members of the Tui Tonga family are buried is called langi. As is usual with native classifications in Tonga, these terms refer to use rather than to structural form. Thus the grave of a Tui Tonga, regardless of its shape, size, structural detail or other peculiarities, is a langi. As a rule, however, there were normal types of *tanuanga*, *faitoka*, and langis.

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The *tanuanga* may be described as a small mound of earth or sand, similar in shape and size to European grave mounds. It needs no special consideration as it has no important bearing on Tongan archaeological problems.

The *faitoka* is normally a comparatively large mound of earth and sand, in shape a truncated cone with moderately sloping sides, containing from one to several buried stone vaults. The term *faitoka* includes not only the mound, which was more specifically called *foifaitoka,* but also a definite area surrounding the mound where a chieftain's important retainers and distant relatives were buried.

The langi is normally a rectangular platform or succession of platforms placed to constitute a stepped pyramid and supported by carefully constructed retaining walls of dressed stones. One or several stone vaults were buried under the flat top of the structure. The term *makapaipai* (*maka,* stone; *paipai,* stunted in growth), applied to langi stones, may imply a reducing from original size; in other words, stone dressing.

The stone vaults (*funualoto*), in both *faitoka* and langis are apparently of a single type. Each vault consists of six large, rectangular slabs of stone; one placed horizontally forms the bottom, four placed vertically on edge constitute the sides, and the sixth disposed horizontally forms the lid or cover. In some vaults the bottom piece was omitted.

Both *faitoka* and langis were, in a limited sense, family cemeteries. Each might contain many burials in one vault or in separate vaults. When several vaults were placed in one structure the area above each vault was marked by a relatively small surface mound (*fungaputu*), carefully constructed from fine, light colored sand. Such mounds were rectangular in outline, flat-topped and with sides sloping at the angle of rest of sand. Small, black, water-smoothed, volcanic pebbles of equal size, burnished with coconut oil to enhance their decorative value, were disposed solidly or in outline about the surface of the mound. These were called *kilikili.* Over each *fungaputu* a structure of usual dwelling house type (*faletolia*) was built to protect the decorative mound from the elements. The houses, save for rare traces, are now gone from the old tombs. House parts were found at only one site, langi Heketa, and these are of stone (p. 38).

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FAITOKA

Old *faitoka* were encountered near every old village and former village site observed. Their possible number has been considerably lessened by the practice of many families of using a single *faitoka* for many generations as a burial place for its ranking members. In spite of this fact, no less than eight well known *faitoka* were located in and about the small village of Maofanga, Tongatabu.

172 764 The mounds vary considerably in size. One called Huluipaongo (*hulu*, dry leaves; *paongo*, a vine producing the *hulu* leaf, now growing plentifully about the mound), is situated near the southwest point of the island of Lifuka, Haapai. It is 15 feet high, with a diameter of 40 feet at the top [175] and 110 feet at the base. This mound contains the tomb of the Matauvave family, and as the first Matauvave was appointed governor of Haapai by the Tui Tonga Kauulufonuafekai at a date approximating 1540, was probably built in the sixteenth century.

An ancient *faitoka*, situated at a place called Houmakalae near the town of Otea, Kapa, Vavau, is 16 feet in height and 100 feet in base diameter. It is called Avatongo (*ava*, crevice; *tongo*, mangrove shrub), but no accurate information was found regarding its history.

The average *faitoka*, however, is smaller and is well represented by that called Kelekelemeifisi (*kelekele*, earth; *mei*, from; *fisi*, Fiji), situated on the southern outskirts of the town of Maofanga, Tongatabu. It has a maximum [173] height of 8 feet and a base diameter of 75 feet. It is the burial place of Lavakahaatuukau, an important chieftain who moved to Maofanga from Mua and there built this *faitoka*, according to tradition, exclusively from earth brought from Fiji.

[217] The Tongans maintain an admirable respect for their ancient dead, a respect which is strengthened by well kept genealogical records, by means of which present day inhabitants trace their descent from those buried in many [128] of the ancient tombs. Archaeological excavation of *faitoka* is prohibited and a thorough study of stone vaults (*fonualoto*) is therefore impossible. The one vault available for observation, though not in a *faitoka*, probably closely resembles it in every particular (p. 50).

172 764 127 I am indebted to Mr. Guttenbeil of Niafu, Vavau, for a description, based on first hand observation, of a *faitoka* vault. Mr. Guttenbeil witnessed the burial of a boy related to Maatu in the vault of the ancient Maatu *faitoka* on the island of Niuatoputapu. According to his account, confirmed by Maatu and other qualified informants, the vault had not been used for several generations and its exact whereabouts in the more recent burial ground, which had come to practically cover the *faitoka*, was known only by one old 172 764 woman. She indicated the place to dig. The workmen dug through many more modern graves, placing the exhumed bones carefully to one side. Finally they came to the flat stone [illegible] of the vault, which was 15 feet long and 10 feet wide. It was found to [illegible] so heavy that all attempts to remove it failed. Accordingly, one end was cut off to afford an opening. The narrator with others entered the vault. It had four perpendicular slab walls and a horizontally placed slab for floor. The stones were smoothly dressed. A skeleton lay prone, face up, in the center of the vault floor. This they reckoned to be the remains of the Maatu who built the tomb. Around the

central figure on every side were numerous skeletal remains so disposed as 172
to imply that the individuals represented had been placed sitting about the 764
walls, facing the center. These were reckoned to have comprised the "companions," those who were elected to accompany the dead chieftain, as servants, to the world of the dead. There was about 1 foot of fine, dark colored dust covering the floor, the probable remains of material goods, such as fine mats and tapas, buried with the dead out of respect to his wealth and station.

Mariner (16, vol. 1, p. 144) gives the measurements of a vault observed 127
in Haapai as 8 feet long, 6 feet wide, and 8 feet deep. 172
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LANGIS

DISTRIBUTION AND GENERAL FEATURES

Native traditions and records name 45 langis, 37 are on Tongatabu, 6 in
the Haapai group and but 2 in Vavau. Of the langis on Tongatábu, 28 are 172
in or near the town of Mua, the modern survival of Lapaha, the ancient 764
capital of the Tui Tonga dynasty.

All the 45 langis referred to by combined sources of information were [127]
actually examined, although specific identification of some is doubtful, and [128]
for a few of them was not attempted.

In structural type, langis do not adhere to a uniform technique warranting group classification. Some langis are not to be distinguished, structurally, from *faitoka*; others are composed of from one to five rectangular platforms, each retained by perpendicular stone walls. Where a plurality of platforms occurs, the smaller are mounted upon the larger in regular succession, according to corresponding differences in lateral dimensions, to form stepped pyramidal structures. Many of these are of imposing size. One or more stone vaults, entered from the flat top of the structure, are present in most langis, but there are exceptions to this rule (pp. 55, 114).

The one attribute which all langis share, the one factor which serves to 172
group them, is use; they are invariably the tombs of important members of 764
the Tui Tonga "family," which includes not only the immediate family of the 644
reigning king but also the family of the Tamaha, of the Tui Tonga Fefine and of certain closely related chiefly families such as that of the Tui Haatakalaua. However, in langi burials there was no confusion or uncertainty as to rank.

All stones in the retaining walls and also in vaults, judging from reports 172
and from the single vault examined, are rectangularly dressed and fashioned 764
of coral "sandstone" or reef limestone. Of the two materials, "sandstone" by far predominates.

Both Cook (4, vol. 1, pp. 312-314) and Forster (9, vol. 1, pp. 451-452) [175]
observed and to a certain extent described some of the langis at Mua, Tonga- [114]

172 tabu, although they mistook these structures for variations of the *faitoka*
175 which they had seen elsewhere. Both describe the *faletolia* as intact and
764 apparently kept in good condition on the langi tops, and speak of wooden
[114] images or representations of men which were seen on one of the langis.
D'Urville (5, vol. 4, pp. 279-280) also mentions something of the kind. Cook describes the images in the following words:

> One of the houses, situated over a grave mound on a langi, contrary to what we had seen before, was open on one side; and within it were two rude, wooden busts of men; one near the entrance, and the other farther in. On enquiring of the natives, who had followed us to the ground, but durst not enter here, what these images were intended for? they made us as sensible as we could wish, that they were merely memorials of some chiefs who had been buried there, and not the representations of any deity. Such monuments, it should seem, are seldom raised; for these had, probably, been erected several years ago. We were told that the dead had been buried in each of these houses; . . .

If the example mentioned by Cook is not unique, this practice of erecting wooden or other effigies over the langi or *faitoka* was at least a most unusual one.

172 To ascertain to what degree, if any, the langis are oriented with reference
764 to any recognized standard, the trends of the walls of thirty rectangular
langis were recorded. According to compass measurements, the direction of
[126] the northwest walls and that of the approximately parallel southeast walls vary from N. 9° E. to N. 40° E. One wall of Otalafava trends N. 74° E. The trend of the northeast and the southwest is likewise highly variable—N. 50° W. to N. 82° W. Thus the variability exceeds 30° out of a possible 45°. Furthermore, little attention seems to have been given to corners; in the 30 langis measured, the corner angle varies from 82° to 99°. These figures make it obvious that the alignment of the langis is out of accord with any standard system of orientation.

There is no possibility of doubt as to the origin and purpose of *faitoka* and langis. They are the burial places of Tongan chieftains who governed the ancestors of the present native inhabitants from a remote prehistoric period into historic times. Some of the *faitoka* are still in use. The workmanship envolved is not such as to suggest any foreign or lost art, but rather, logically conforms to the primitive methods and tools which the Tongans are known to have had, and generally harmonizes with the state of primitive Tongan culture.

STRUCTURAL TYPES

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764 To simplify presentation, it seems advisable to treat the various langis as
128 constituting six distinct structural types (fig. 17). Although there are many

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variations from the type forms, none are so radical as to render the classification void of definite meaning and usefulness.

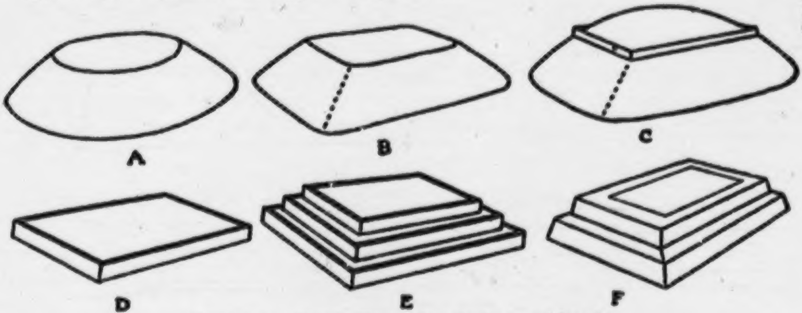

FIGURE 17.—Sketch illustrating six types of langis.

Type A. A conical mound of earth, symmetrically proportioned, with sides sloping gradually toward a slightly convex top.

Type B. A truncated, rectangular pyramid of earth and sand with corners necessarily rounded because of the building materials used. In one langi (Makamaka) the horizontal outline of the structure is shaped like a D, rather than like a rectangular parallelogram. The sides slope at an angle approximating the angle of rest to a smooth, flat top. A surrounding ditch may or may not be present.

Type C. A mound of earth, rectangular in base cross section, with sides sloping upward to a somewhat conical top. Intermediately between the base and the top of the mound is a low, perpendicular, rectangularly disposed wall of upright, dressed slabs of stone. These stones are of equal height and thickness and are closely joined end to end to effect a very smooth lineation.

Type D. A rectangular platform of earth, low and flat, supported on all sides by a continuous, perpendicularly disposed retaining wall of well matched and closely fitted dressed stones. These stones are invariably slabs placed on edge.

Type E. A stepped pyramid composed of two to five Type D platforms of regularly diminishing size placed the smaller upon the larger. Intervals between the base of the surmounting platform and the top of the foundation platform are uniform on all four sides, and where more than two steps are present, the depth of succeeding steps remains approximately constant.

Type F. Represented by a single langi, is like Type E, save that the stone retaining walls enclosing the various platforms, excepting the top platform, are sufficiently wide to include the entire width of the step, thus effect-

172 ing a lateral surface of unbroken stone, rather than one marked by vertical
764 walls of stone and horizontal surfaces of earth.

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DESCRIPTION OF LANGIS

The following list includes the Tongan langis identified by name and four langis (Nos. 42-45) for which informants had no name. The list also includes four names, Koolonamu, Tamatiu, Tongamanatu, and Tauhakeleve, which could not be definitely associated with structures. The coincidence of four unnamed langis and four unclaimed langi names, applying to the specific Lapaha group of Tongatabu, is, to say the least, most agreeably surprising. Numerical discrepancies might be expected especially as some langis seem to have more than one name, and this very fact of multiple nomenclature influences me to accept the coincidence in question as of doubtful implication. Certainly, it does not necessarily follow that the four unattached names apply to the four nameless langis.

172 1. Atea, on the south side of the lagoon on the island of Nomuka,
764 Haapai. Type D.

The measurements of Atea were, unfortunately, lost but the following figures are approximately correct: the sides average 50 feet in length; the retaining wall is less than 1 foot in apparent height and about 0.7 foot in thickness; the stones constituting the wall average 3 feet in length. The vault is concealed and no surface indications of burial are apparent.

[173] Atea derives its name from Ate, a wife of one of the Tui Tonga residing on
[644] Namuka, for whom the tomb is said to have been built. Tradition, however, says that she is not buried there but in the *faitoka* Takahilipakisi at Maofanga, Tongatabu.

2. Faapite, at Mua, Tongatabu, Type E (fig. 18).

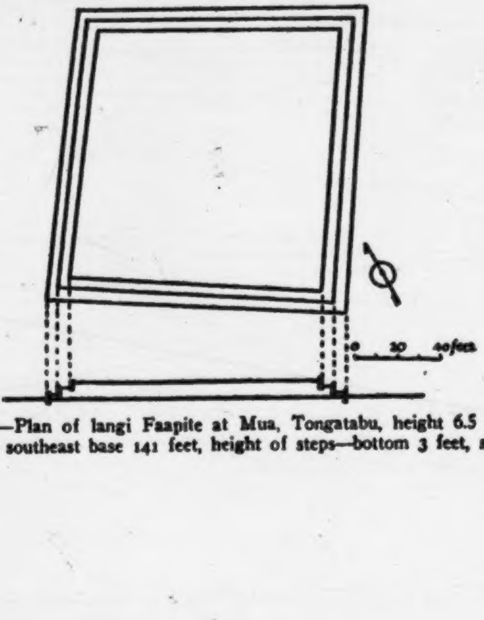

FIGURE 18.—Plan of langi Faapite at Mua, Tongatabu, height 6.5 fee', northeast base 133.5 feet, southeast base 141 feet, height of steps—bottom 3 feet, second 2.5 feet, top 2.7 feet.

In one account this langi is called Foou (New), but according to data in the hands 172
of Prince Tungi, Foou has only two terraces. There may be two langis bearing the 764
name Foou.

Faapite is a three-terraced structure. The stones used in the retaining walls supporting each of the three earth platforms are 6 to 10 feet long and 0.8 foot to 2.5 feet thick. All visible stone parts are either of coral "sandstone" or of reef limestone. The surfaces are comparatively smooth, the squared corners clean-cut. Stones are in contact end to end with a smooth nicety, where they have not been displaced through natural agencies. Terrace wall corners are formed by overlapping without any apparent plan.

Faapite is said to be the burial place of one named Sanualio, but there is no external evidence of vaults. A monumental *makahunu* (volcanic) stone, bearing the name Pau, reported as occurring in the walls, could not be located.

3. Faletoonga (House-of-rites), east of Mua, Tongatabu, to the left of the road from Mua to Hoi, Type A.

Faletoonga, also called Tuitonga, is broadly oval in shape, its longest dimension extending east and west. It is 5 feet high, with a flat top 60 feet long and 45 feet wide. The base stands about 12 feet outward from the margin of the top surface, giving the sides of the mound a slope of about 25°. There is no apparent difference between the earth employed in the mound and that of the surrounding land. No record of burials was found.

4. Fangaloto (Deep-anchorage), at the town of Lufe, near Navai, Tongatabu, Type A.

As the property on which the langi stands bears the name Fangaloto, it seems probable that the mound borrowed this name in comparatively recent times, locally it is called Uhiao. This approximately circular langi is 65 feet in diameter and 6 feet in height.

According to a story told by the inhabitants of Navai, the mutilated body of the 172
murdered Tui Tonga Puipui was washed ashore at Fangaloto. A matapule named 764
Lufe found the headless corpse, and conceiving it below the dignity of the king to be
buried without a head, had his own head removed and buried with the torso of the 643
Tui Tonga. 173

5. Folokamanu at Mataliku, not far from Pea, Tongatabu, Type A. 172

Folokamanu is a roughly circular structure with a comparatively flat top. Its maxi- 764
mum height is 7.5 feet; its top diameter, 30 feet; its bottom diameter, 90 feet. The
surface of the mound is formed of earth similar in color and texture to that of the surrounding soil. The mound interior, however, consists of alternating spots of earth and fine white sand impregnated with small shells.

A daughter of some forgotten Tui Tonga is said to have been buried here. Her [644]
name is reported as Fatafehi (*fata*, house loft; *fehi*, hardwood tree, *Afzelia bijuga*), [173]
a favorite name for women in the Tui Tonga family. Excavation discovered the skeletal remains of several individuals (p. 114).

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6. Heketa (To-move-on-the-buttocks-and-strike) in the Hahake district, Tongatabu, near the Haamongaamaui (fig. 19).

This langi consists of two overlapping platforms: *a*, a type D structure, *b*, a type E structure with three tiers. The retaining wall of the middle tier is inset 3.7 to 3.8 feet from the outer edge of the first tier, and is separated from the third tier by an interval of 3.9 to 4 feet. The retaining walls of platform *a* and of the bottom tier of platform *b* are of the same height where in contact, but vary elsewhere as much as 1.7 feet. The dressed coral "sandstone" blocks comprising the retaining walls are 3 to 6 feet in length and 0.5 foot to 0.7 foot in thickness. Their surfaces are smooth, the squared edges regular and sharp-cut and the stones meet end to end with tightly fitting exactness. The wall corners are formed by one corner stone overlapping the end of the other.

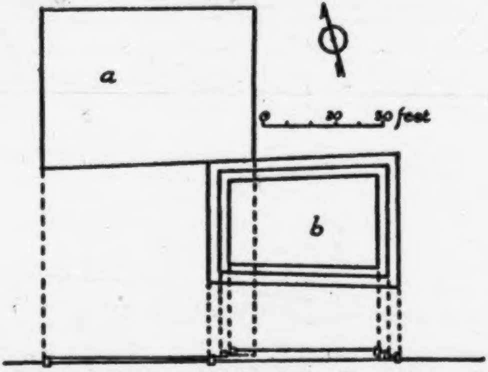

FIGURE 19.—Plan of langi Heketa, Hahake district, Tongatabu: *a*, platform 109 feet long, 65 feet wide; *b*, platform 3 feet high, height of retaining walls—bottom tier 1.7 feet, second tier 0.7 foot, top tier 1.3 feet.

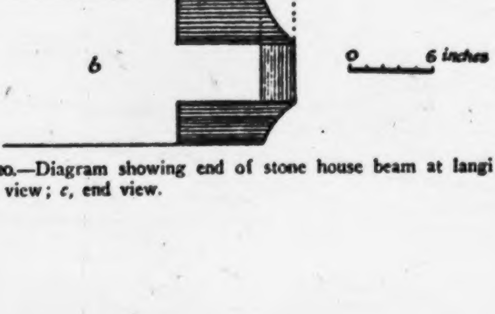

FIGURE 20.—Diagram showing end of stone house beam at langi Heketa: *a*, side view; *b*, top view; *c*, end view.

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There has been a house on the top of platform *b* which is consistently reported 172 to have been supported originally by four posts of squared stone, connected by stringers 764 which were also of dressed stone. The single sizable element remaining is a piece of coral "sandstone," 4 feet long, 0.8 foot wide and 0.7 foot thick, which appears to have been a stringer or rafter. Its special interest is due to the fact that it retains one unbroken end which is elaborately shaped, apparently for the purpose of being mortised (fig. 20). All surfaces are carefully dressed and all angles sharply defined. This stone-posted and raftered house is said to have been called *falepoumaka* (house-of-stone-posts)—probably a recent descriptive term. The house is said to have faced south and its use is supposed to have corresponded with that of similarly placed houses (p. 31).

Platform *b* is said to be the langi proper, containing the burial vault or vaults. Platform *a* is described as the site for the house of a matapule assigned to act as [644] guardian and caretaker of the langi. [342]

Fatafehi, the daughter of Tui Tonga Tuitatui, the first female member of the family to bear that name, is said to be buried in Heketa. According to one report [173] Tuitatui also is buried here. No surface indications of vaults are visible. [644]

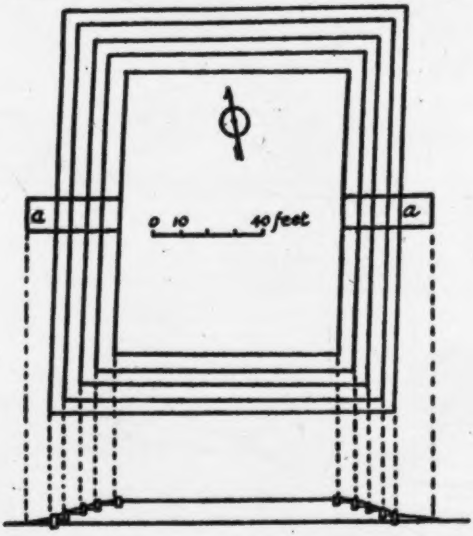

FIGURE 21.—Plan of langi Katoa at Mua, Tongatabu, height 7 feet, length of east base 140.4 feet, length of south base 120 feet, retaining walls—bottom 2.2 feet high; second 2.8 feet high, inset 5 feet; third 0.8 foot high, inset 5.7 feet; fourth 1 foot high, inset 5 feet; fifth 1.9-2 feet high, inset 5.9 feet: *a*, approaches.

7. Katoa (The-whole) in Mua, Tongatabu, Type E (fig. 21).

Katoa consists of five tiers, each of which is very low as compared with the other dimensions. The dressed stones of which the vertical sides of the tiers are fashioned are 4 to 14 feet in length and average 1 foot in thickness. The largest of these, situated on the western side is 14 feet long, 2 feet thick, and stands 5.95 feet above ground. Such monumental stones, present in the western walls of many langis, are

172 called *kalahala* (*hala*-demise, applied to the Tui Tonga and Tamaha; a road or path; 764 a doorway or entrance; a sacred club). The surface of these stones are fairly smooth and adjoining sides meet in sharply defined angles. In the retaining walls on all four sides of the langi are selected stones bearing incised decorative designs (p. 79).

In the center of the east and west sides of the structure and exactly opposite each other are two approaches, not unlike stairways in which the steps of the pyramid constitute the steps of the stair, extending from the ground level to the top of the langi. Each stairway consists of parallel stone walls, about 12 feet apart, cutting the tiers of the langi at right angles to constitute retaining walls for the ascending approach. The upper surfaces of the walls maintain the angle established by the general slope of the pyramid. The stepped area between those balustrades was originally [491] filled to form a smooth slanting roadway, roughly paved with flat slabs of stone of assorted sizes and shapes. Some of this pavement is still in place (Pl. II, *A*). No record was found of burials.

8. Koolonamu is said to be the name of one of the langis of Mua, Tongatabu, but no one seems able to identify it or to contribute additional information.

9. Leka (called also Lekamakatuituioha, a name referring to one of its monumental stones) in Mua, Tongatabu, Type E (fig. 22).

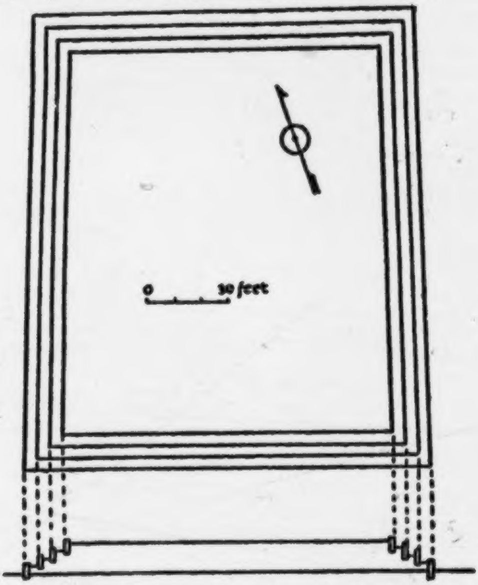

FIGURE 22.—Plan of langi Leka at Mua, Tongatabu, length of base 166 feet, width of base 140 feet, height 12 feet, height of retaining walls—bottom 3.7 feet, second 3.4 feet, third 3.2 feet, top 3.3 feet, width of steps 4.75 feet, 3.8 feet, and 3.75 feet.

Leka consists of four tiers, with corresponding retaining walls. The average thickness of retaining walls is 0.9 foot, 1.4 feet, 0.9 foot, 1.3 feet, with a maximum

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of 2.1 feet and minimum of 0.7 foot. All the stones in the walls are comparatively large. Some exceptionally large stones rise above the general level of the wall. A stone in the top tier wall near the southwest corner is 4.8 feet high, 1.3 feet wide and 23.8 feet long; one in the bottom tier on the south side is 3.7 feet high, 1.7 feet thick, and 24.7 feet long; and one in the second tier at the northeast corner is 3.9 feet high, 1.5 feet thick and 12.2 feet long. One of these *halakala* stones, it could not be determined which, is called Tuituioha. If the others originally had names they are now forgotten. All stones are exceptionally well surfaced and smoothly joined end to end. The corner stones overlap without regard to order (Pl. III, *A*). A basal flange 0.3 foot to 0.5 foot in width on the walls of the bottom tier at the level of the ground indicates that the stones were dressed after having been permanently placed in the wall.

Leka is said to have been built by Tulunga. No information regarding burials was obtained.

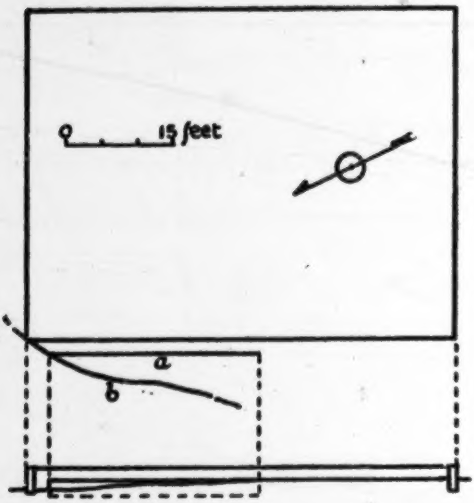

FIGURE 23

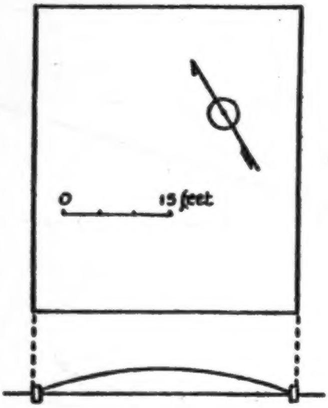

FIGURE 24

FIGURE 23.—Plan of langi Langalangafehi at Mua, Tongatabu, length of west wall 60.5 feet, length of south wall 46 feet, height of retaining wall 1.5 feet (at the northwest corner 2.6 feet): *a*, lower terrace wall; *b*, ancient shore line.

FIGURE 24.—Plan of langi Loamanu I at Longoteme. Tongatabu, length 42 feet, width 36 feet, height to crest of mound 3.5 feet.

10. Langalangafehi (To-start-opening-oysters), on the northern outskirts of Mua, Tongatabu, and immediately beyond langi Lili, Type E (fig. 23).

Langalangafehi has a somewhat peculiar shape. It jutts out over a natural embankment which follows an ancient shoreline, extending in a northeast-southwest direction. The eastern side of the langi has but a single tier, like a Type D structure.

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The western side, however, has a short additional outside tier, a foundation to the upper tier which is required by the abrupt downward dip of the land surface.

The walls are from 0.8 foot to 1 foot thick and consist of smoothly joined, carefully surfaced, stones 2 to 4 feet long. At each corner stones are lapped one over the other without regard to a uniform arrangement. The wall stones show a basal flange 0.25 foot to 0.35 foot in width and so irregular in outer outline as to suggest that the stones had been finally dressed after having been placed in the walls. There is no surface indications of a vault and no information was found regarding burials here.

11. Lili, on the *api* Siliva, east of the principal group of langis at Mua, Tongatabu, Type B.

The flat top of Lili standing 4.5 feet above the surrounding land, is 112 feet long and 83 feet wide. From its top the sides of the mound slope outward at an angle of about 20°. The earth constituting the surface of the mound is like that of the adjoining land. A person by the name of Alusa is said to be buried here but no surface evidence of a vault was apparent.

12. Loamanu I, at Longoteme, Tongatabu, Type D, but with a rounded top as that of Type C (fig. 24).

The retaining wall of Loamanu I is composed of upright stones 0.6 feet to 1 foot in height, 0.2 foot to 0.8 foot in thickness, and 2 to 3 feet in length. One stone in the northwest wall, near the southwest corner, has an apparent height of 1.2 feet and is 0.7 foot thick and 4.8 feet long. The crest of the rounded top of the mound stands 3.5 feet above the average level of the surrounding land. The stones are smoothly dressed and adjacent surfaces meet in sharply defined edges and corners. They meet each other end to end with an admirable exactness. Corners are formed by one stone overlapping the end of the other, in the usual manner. A Tui Tonga Fefine, whose name is now forgotten, is said to be buried here but there is no surface evidence of a vault.

13. Loamanu II, on the island of Tungua, Haapai.

Loamanu II was not seen, but according to dependable reports, it is a Type D structure situated directly south of the langi Siapua (p. 54) and favoring Siapua in general size and structural technique. It is reputed to be the burial place of an important chief of the Tuihaatakalaua family whose name is now forgotten.

14. Loamanu III. (See Tui Haatakalaua group, p. 58).

15. Makamaka (Stony) between Fuamotu and the *api* Haavaka, Tongatabu (fig. 25).

In most respects Makamaka is a Type B structure but has many special features (fig. 25, *a*). It has a D-shaped outline, and is entirely surrounded by a ditch, or moat, its sloping walls converging toward a narrow bottom. On the south and west sides a platform stands between the base of the mound and the inner edge of the moat. On the north and east sides the sloping surface of the mound continues unbroken to the bottom of the moat. The moat is bridged on the south and northeast sides by earthen fills.

Makamaka is but the largest of a group of five mounds. Three of these (fig. 25, *b, c, d*) are truncated cones, in shape like the Type A langi. They form a straight row extending directly south of the southernmost of the two bridge ways of Makamaka. Northeast of the Makamaka langi proper, in line with the direction of the northeastern bridge way, is a roughly rectangular mound surrounded on three sides by a moat

(fig. 25, *e*). This mound has a fairly level central top, of indefinite area, from which 172
its sides slope gradually to the moat bottom or to the ground level. A bridge way 764
crosses the moat on the southwest side to form a gently sloping ascent to the mound top.
Loose fragments of coral "sandstone" are strewn about the edges and the surface of mound *b*. The largest fragments measure 3 feet by 2.5 feet by 0.3 foot. This apparent refuse from stone dressing tends to support the prevailing opinion that there are stone vaults in these mounds.

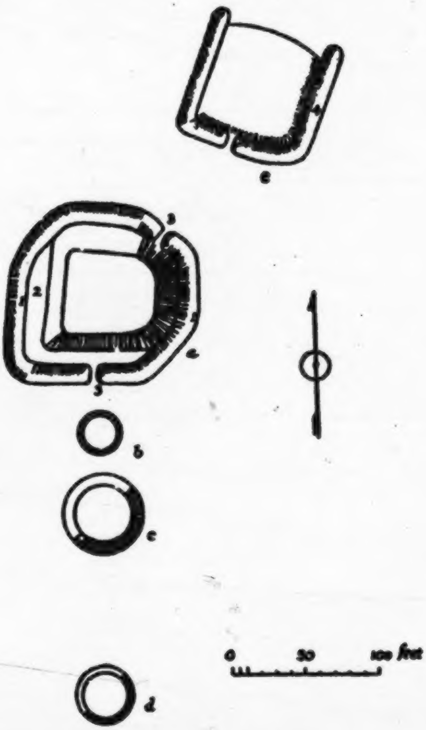

FIGURE 25.—Sketch of langi Makamaka and adjoining mounds: *a*, Makamaka, height 4.5 feet, base 89 by 83 feet, top 62 by 56 feet, slope of sides 20° to 22°; *b*, mound, 41 feet in diameter, 2.5 feet high; *c*, mound, 55 feet in diameter, 5.5 feet high; *d*, mound, 29 feet in diameter, 1 foot high; *e*, mound, 3.5 feet high, 70 feet long, 66 to 68 feet wide—1, moat, 14 feet wide, 3 to 4 feet deep; 2, platform, 9 to 12 feet wide; 3, earth fills, across moats 6 feet wide; 4, moat, 11 feet wide, 3 to 6 feet deep.

It is said that a pregnant Tui Tonga Fefine, name unknown, is buried here and 173
that because of this woman's pregnancy, a man named Moulamufuaamotu, who was 644
chief of Fuamotu at that time, acquired the new name Tofamealo.

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16. Matamoana (Facing-the-sea) called also langi Talangaholova, between Tufamahina and the *api* Talangaholova, Tongatabu, Type A.

Matamoana has no distinctly outlined top but gradually descends on all sides from a gently convex center to the level of the surrounding land. Its maximum elevation is 11 feet and its diameter 40 feet.

Tradition says that a girl and a boy, brother and sister, whose names and exact lineage are forgotten, are buried here, but aside from small fragments of coral sandstone, which are scattered about the mound base, there is no surface indication of the vault.

17. Maluatonga (Cringing-Tonga) or Matuatonga (Ancient-Tonga), in Mua, Tongatapu, Type D.

The southwest retaining wall of Maluatonga is 84 feet long; the southeast wall, 87 feet. The continuous top surface of the wall averages 1.9 feet in height above the surrounding land level; the dressed stones comprising the retaining wall are 0.6 foot to 0.8 foot in width and average 3.5 feet in length. The wall includes three monumental stones. Of two at the southwest corner one said to bear the name Vaia, measures 7.8 feet by 4.6 feet, by 0.8 foot to 1 foot. The other said to be named Tuituiohu, after a Tuihaangata chieftain, measures 8.4 by 4.8 feet by 1 foot. These two corner stones overlap at their ends and are mortised into each other for a depth of 0.1 foot. The third large stone in the northwest corner monument has fallen from its original upright position. It is 6.5 feet long, 4 feet wide and 0.7 foot thick. Apparently its foot was buried about 0.9 foot in the ground. The mound material originally contained within the retaining walls has largely escaped through wash and seepage, giving the wall where intact the appearance of an enclosure. There is no indication of a vault.

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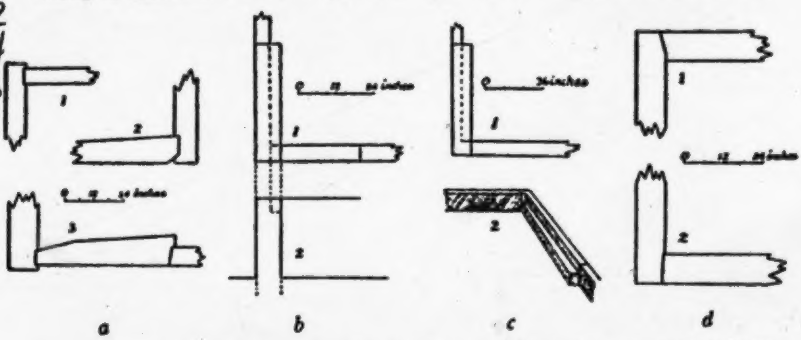

FIGURE 26.—Details of stone work in langis: *a*, mortising of corner stones in langi Maluatonga—1, northwest corner; 2, southeast corner; 3. southwest corner—; *b*, southwest corner langi Olovehi—1, flat plan; 2, vertical plan—; *c*, corners in platform b, langi Nukulau—1, plan; 2, perspective—; *d*, corners in platform a, langi Nukulau —1, northwest corner; 2, southeast corner; 3, southwest corner.

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[333] The skill in masonry exhibited in Maluatonga is relatively high. Not only are the stones exceptionally smooth and sharply outlined in all inter-surface angles, but three of the four lapped corners, those to the northwest, southwest and southeast, are fashioned to have the lapped stone mortised into the overlapping one (fig. 26, *a*).

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This langi is said to have been built for the son of a Tui Tonga not named, and 764
a woman of Uvea. On account of the Uvean blood in the prince, the langi is regarded
as "common," not to be respected. Thus a man of low social standing will say: "When 173
hungry, I eat on Maluatonga." 565

18. Mounga (Mountain) immediately south of langi Siapua (p. 54), island of Tungua, Haapai, Type D. 172 764

The westernmost retaining wall of Mounga is 60 long; the northernmost, 55 feet. The wall stones average 2 feet in apparent height, 3 feet in length and 0.7 foot in thickness. The middle section of the southernmost wall is marked by two monumental stones, each 2 feet wide, 0.7 foot thick, and 4.5 feet high. They are separated by a stone of average height and length.

An interesting feature of Mounga is a platform approach, centrally placed, adjoining the westernmost wall. It consists of low retaining walls of stone enclosing a gravel platform 10 feet in length, at right angles to the adjoining wall, 8 feet in width, and raised 0.5 foot above the surrounding level.

The stone dressing throughout the structure is good, excellent in places. Stones in the wall are joined end to end with exact nicety and the corner stones are lapped one across the end of the other. At the northwest corner, stones are mortised into each other to a depth of 0.2 foot. A Tamaha named Mounga is said to be buried here.

19. Moungalafa (Flat-mountain) or Moungalofa (Love-mountain), north of Mua near Afa, Tongatabu, Type D (fig. 27, *a*).

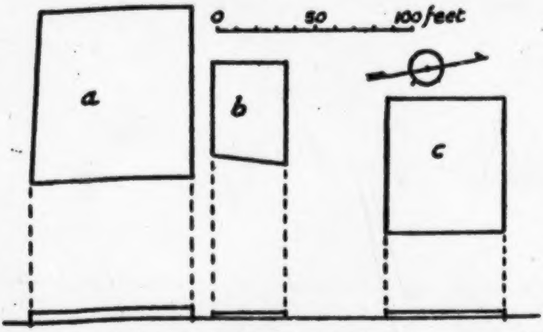

FIGURE 27.—Plan of langi Moungalafa and adjoining platforms near Mua, Tongatabu: *a*, Moungalafa, 90 feet long, 79.5 feet wide, 3.5 to 5.5 feet high; *b*, 48 feet long, 39 feet wide, 1 to 1.5 feet high; *c*, 69 feet long, 1 to 1.5 feet high.

Moungalafa is the largest of a group of three platforms. For the remaining two (fig. 27, *b*, *c*,), which are said to "belong" to Moungalafa, no names were obtained.

The retaining walls vary in apparent height according to the configuration of the surrounding land, but the top of the wall is level and slightly higher than the enclosed platform. All the stones comprising the walls are of unusually large size, averaging more than 6 feet in length and 1 foot to 1.8 feet in thickness, a large stone at the southeast corner is 4.4 feet in apparent height, 1.8 feet thick, and 17.5 feet long. Another at the southwest corner has an apparent height of 5.1 feet, a thickness of 1 foot, and a length of 16.5 feet. Many other stones are nearly as large. The surfaces of these

172 stones are smoothly dressed and the angles formed by adjoining faces are sharply defined. The stones meet end to end with a neat precision, and the corners are formed 764 by overlapping in the usual manner. Uhatafi was of the opinion that the Tui Tonga Tuitatui is buried here rather than in the langi Heketa. In the platform illustrated in figure 27, *b*, the dressed stones comprising the retaining walls average 0.8 foot in thickness, and are from 2 to 3 feet long. Those of the platform shown in figure 27, *c*, average 0.8 foot in thickness and are from 3 to 8 feet in length. The workmanship of both b and c is like that of the main platform. No record of burial was obtained.

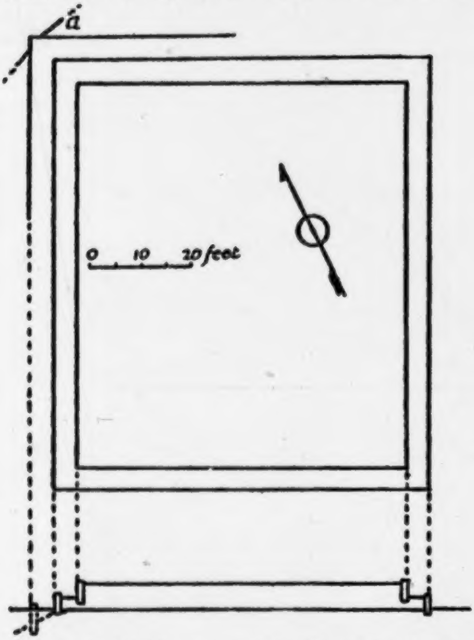

FIGURE 28.—Plan of Nakulukilangi near Mua, Tongatabu, height 5 feet, length of eastern wall 83 feet, length of southern wall 73 feet, bottom step 3 feet high, 4.5 feet wide, second step 2.5 feet high, 4.6 feet wide: *a*, ancient shore line.

20. Nakulukilangi, north of Mua, Tongatabu, near Langalangafehi (p. 41), Type E (fig. 28).

Nakulukilangi consists of two tiers; save in the northwest corner where the structure protrudes over the edge of the steeply sloping, ancient shoreline.

Here a bottom tier beginning with a height of 2 feet gradually decreases with the rising contour of the land until its walls entirely disappear. The stones comprising the retaining walls average 6 feet in length and 0.8 foot in thickness. An exceptionally large stone on the northwest corner of the bottom tier, on the north side, is 16.5 feet long and 0.9 foot thick. The dressed surfaces are comparatively smooth, the angles between surfaces sharply defined. The cornerstones overlap without regard to uniformity.

This langi is said to be the burial place of the Tuilakepa family. It was opened within the memory of living inhabitants, when the large stone vault was found to contain the skeletal remains of a child, a wooden pillow (*kali*) and an ornament of whale tooth (*lei*).

21. Namoala in Mua, Tongatabu, directly west of Paepaeotelea (No. 26), Type E (fig. 29).

Namoala consists of three tiers with a combined height of 6 feet. The retaining walls are 0.5 foot to 1.7 feet thick. The stones vary greatly in size. Some are not more than 4 feet long but a large stone in the bottom tier on the south side, is 11.4 feet long, 2.2 feet in apparent height and 0.8 foot thick, and a stone in the second tier is 14.5 feet long, 2 feet high and 0.4 foot thick. An approach to the langi consists of a flat paved area on the ground and pavements on the succeeding tiers. The ground pavement is a single squared and dressed slab of stone 7 feet long, 5 feet wide, and 1 foot thick, placed lengthwise against the retaining wall (fig. 29, *a*). The pavement on the first tier consists of irregular stone slabs and fragments, the largest is 3 feet long and 2 feet wide. The pavement on the second tier is formed of more or less scattered stone fragments. The lid of a vault visible on the top of the platform is a squared slab of stone, its sides in alignment with the directions of adjacent retaining walls (fig. 29, *b*). All stone parts of the langi proper are neatly dressed and disposed to match adjoining stones with nice precision, the corner stones overlapping in the usual manner. This structure is said to be the burial place of Tuihaateiho. It is also reported to contain the remains of a woman by the name of Finau.

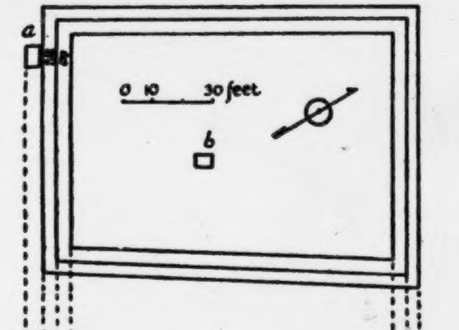

FIGURE 29.—Plan of langi Namoala at Mua, Tongatabu, height 6 feet, length eastern wall 122.5 feet, length of southern wall 86 feet, bottom step 1.6 to 2.3 feet high, second step 2.2 feet high, 4.3 feet wide: *a*, stone slab 7 feet long, 5 feet wide, 1 foot thick; *b*, lid of vault 5.8 feet long, 4.3 feet wide, 0.8 to 0.9 foot thick.

22. Nukulau in Mua, Tongatabu, Type D.

At Nukulau are two langis, disposed side by side. As I was unable to determine which is Nukulau, they are here described as A and B.

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Langi A measures 53 feet on its east wall and 50 feet along its south wall. The walls are 0.7 foot to 0.8 foot in apparent height and average 0.8 foot in thickness. From the retaining walls the surface of the body of the mound rises gradually to attain a central height of 2.5 feet above the surrounding level. The corners on the eastern side are lapped in a manner typical of the corners of Tongan langis. The western corners are also lapped, but have interesting peculiarities shown in figure 26, *d*. The stones used in this structure are very small, but show no lack of careful dressing and matching.

Langi B measures 55 feet in length and 42 feet in width, and has an average height of 1.7 feet. The stones in the walls are 3 to 7 feet in length and 0.6 foot to 0.8 foot in thickness, with the exception of a stone at the southwest corner which is 1 foot thick. The top of this stone is so dressed that it has an apparent thickness of but 0.5 foot on the west side and 0.7 foot on the south side, where it creates the false impression of turning the corner without a break (fig. 26, *c*). All the corners are formed in the usual manner, one overlapping the end of the other.

The stones, though small, are very smoothly dressed and meet each other end to end with exceptional exactness. On the northeast cornerstone is a petroglyph, partly effaced (p. 79). No surface evidence of vaults is apparent and no record of burials was obtained for either langi A or B.

23. Olomaloaa in Mua, Tongatabu, a short distance north of langi Namoala, Type D.

Olomaloaa measures 81 feet along its western side, 60 feet along the northern, and averages 2.5 feet in height. The retaining walls are 0.7 foot to 0.9 foot in thickness and the stones comprising it average less than 4 feet in length. A large monumental stone, situated on the southwest corner, is 7.5 feet long, 3.3 feet in apparent height and 0.8 foot thick. The corners are formed by overlapping in the usual manner. All surfacing and matching of stones in the walls is of average merit. There is no surface evidence of a vault, and no record of burials.

24. Olovehi (To-allure-gladly), also called Olovehi Fakasia and Siavakapuna, in the district of Hihifo on the island of Lifuka, Haapai, Type E (fig. 30).

Olovehi is a two-tiered structure. The retaining wall of the bottom tier is 0.4 foot to 0.7 foot thick; the top tier, 0.4 foot to 0.6 foot thick. The stones in the bottom tier average 2.5 feet in length; those in the upper tier 2 feet. A relatively large monumental stone, at the southwest corner of the upper tier, is 4.5 feet in apparent height, 3.1 feet long and 0.5 foot thick. Stone surfaces and interfacial angles are respectively smooth and sharply defined. The joining of stone to stone is marked by smooth contact and continuity of line and surface planes. The corners are formed by one cornerstone overlapping the end of that opposing it, but a stone at the southwest corner of the bottom tier is so dressed, by being partly cut away on the inner side of the top surface, as to give the false impression that the stone turns the corner without a break (fig. 26, *b*).

A stone walled approach ascends the westernmost side of the langi. Two parallel retaining walls gradually rise from ground level to points near the top of the upper tier. The space between these walls is filled with earth and this inclined surface is paved with four large, roughly rectangular, stone slabs (Pl. II, *B*).

This langi is known to be the burial place of the family of Tuita. In this connection, Miss Shirley Baker of Pangai, Lifuka, is quoted as follows: "One of the vaults of this langi was opened for the internment of the late Tuita. In shape, the vault was longer at the base, which was about eight feet, than at the top, where it

was only five feet in length, the two ends slanting inwards. The depth was four feet 172
or more. The walls were about 1 foot thick. The stone slab serving as a cover was
some two feet thick and seven feet square, overlapping the edges of the vault's opening. 764
All of the stone slabs were of a yellowish coral smoothly surfaced and edged.
The body was wrapped in *ngatu* (tapa) and fine mats. It was lowered feet foremost
on account of the narrow opening. The covering slab was moved by ropes passed [767]
round its edges, and pulled by men who stood at the foot of the langi, since no one
could stand on the terraces but the *haatufunga* (burial director).

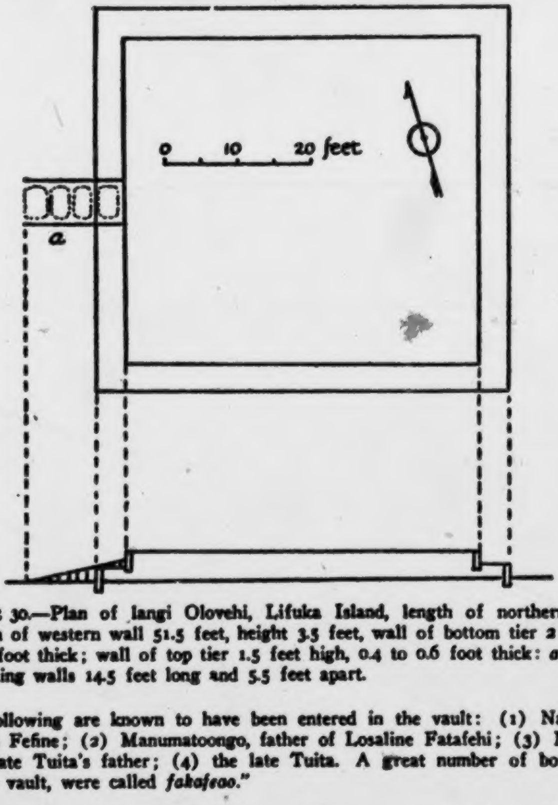

FIGURE 30.—Plan of langi Olovehi, Lifuka Island, length of northern wall 56 feet, length of western wall 51.5 feet, height 3.5 feet, wall of bottom tier 2 feet high, 0.4 to 0.7 foot thick; wall of top tier 1.5 feet high, 0.4 to 0.6 foot thick: *a*, approach with retaining walls 14.5 feet long and 5.5 feet apart.

The following are known to have been entered in the vault: (1) Nanasi Pau, Tui Tonga Fefine; (2) Manumatoongo, father of Losaline Fatafehi; (3) Makahokovalu, the late Tuita's father; (4) the late Tuita. A great number of bones, found outside the vault, were called *fakafeao*."

The vault described is said to be near the westernmost upper wall of the langi, at the top of the inclined approach.

25. Otalafaiva on the island of Euakafa, Vavau, Type D (fig. 31).

The stones of the retaining walls surrounding the flat-topped platform of Otalafaiva are of average size in proportion to the height of the wall.

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A vault (fig. 31, *a*) 29 feet from the southeast corner of the platform, has a large section broken from the lid, which allowed a careful survey of its entire construction. A large horizontal slab of stone, of unknown dimensions, constitutes the floor. Four squared slabs, 0.3 foot to 0.9 foot in thickness, resting vertically upon the floor piece, form the walls. The resulting chamber is 10 feet long, 3.2 feet wide and 4.2 to 4.7 feet deep. The two end slabs project for an undetermined distance beyond the enclosed ends of the lengthwise elements. Three walls are almost perpendicular but the southeast wall leans in toward the top at an angle of about 6° from the perpendicular. The northernmost and southernmost corners define angles of less than 90°; the remaining corners define angles of more than 90°. A somewhat irregularly squared slab of stone in horizontal position forms the top of the vault. It has a length of 10.8 feet, a width varying from 6.5 feet at either end to 7.2 feet at a point intermediate between ends, and is only 0.4 foot thick. The edges of this stone cover, which overlap the walls of the vault on all sides, extend 2 feet beyond the rim of the vault on the southeast side and

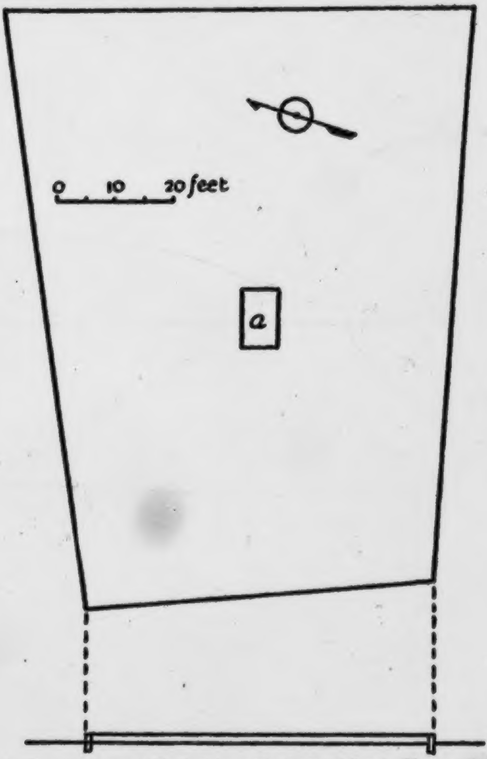

FIGURE 31.—Plan of langi Otalafaiva, Euakafa Island, Vavau, height 1.2 to 1.5 feet, length of northwest wall 101.5 feet, length of northeast wall 79 feet: *a*, vault 10 feet long, 3.2 feet wide, 4.2 to 4.7 feet deep.

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> 1.7 feet beyond the northeast rim. A large triangular section is broken from the southeast side of the vault lid, giving access to the vault. The opening so formed has three sides each slightly more than 2 feet in length. The piece broken from the lid lies beneath the opening on the floor of the vault. Its shape and size are such that it could not possibly have fallen through while the lid was in place, but must have found its present situation at some time when the vault lid was raised, or in course of being raised or lowered.

The bones of a skeleton were found in this vault by a government surveyor.

26. Paepaeotelea (Platform-of-Telea) at Mua, Tongatabu, Type F (fig. 32; Pl. IV, A).

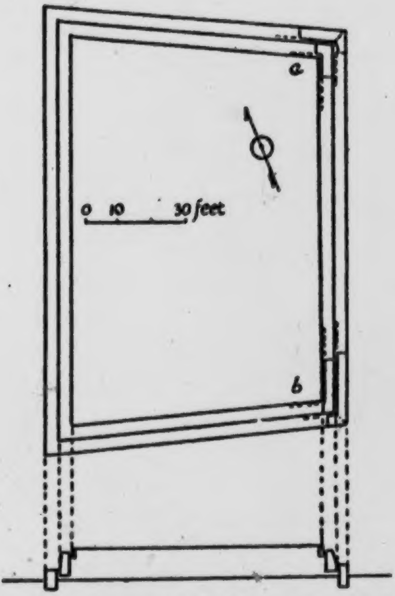

FIGURE 32.—Plan of langi Paepaeotelea at Mua, Tongatabu, height 8.4 feet, length of western wall 135.5 feet, length of southern wall 92.5 feet: *a*, *b*, L-shaped corner stones.

Paepaeotelea is the only structure of its type in Tonga—not a very remarkable circumstance, when it is recalled that the Type F is only a highly perfected form of Type E. This structure has three tiers, the top one irrelevantly small. Its most remarkable features are: (a) the great size of stones in the retaining walls; each retaining wall is sufficiently thick to extend almost to the foot of the wall for the succeeding tier; (b) the L-shaped cornerstones on the easternmost corners; (c) the smooth stone dressing which reaches its highest degree of perfection in the beveled corners of the bottom tier.

172 764 The bottom tier, so entirely dominated by the limestone retaining wall that only an interval of 0.7 foot separates the inner edge of the wall from the outer foot of the retaining wall of the second tier, has an apparent outside height of 3.1 feet and an inside height of 3.4 feet. The outer side of the wall is practically perpendicular; the top, 4 feet wide, slopes gently upward toward the foot of the second tier. The individual stones of the lower tier are 8 to 18 feet in length, excepting the L-shaped cornerstone on the southeast corner, which measures 21.3 feet along the eastern side and 6.1 feet along the southern. The northeast cornerstone, also L-shaped, measures 14 feet along the northernmost side and 6 feet along the easternmost. There is a scarf projecting outward from the bottom of the wall, at a level with the adjacent surface of the land, which is 0.3 foot in width at places. This clearly indicates that the stones were finally dressed after having been set in position in the wall. Where the upward sloping top surface of the tier turns the northeast and southeast corners, a sharp though gentle angle is formed by the meeting of the beveled surfaces.

The second tier is 2.3 feet to 4 feet thick and 4.5 feet high. The top surface is horizontal but the outer surface slants from the base toward the mound to such an extent that the outer top edge of the wall is inset 1 foot from the outer base edge. The interval between the inner top edge of this wall and the outer surface of the top tier varies from 0.7 foot to 1 foot. The southeast and northeast corners are marked by large stones cut in an L-shape to turn the corners. The northeast cornerstones measures 4 feet along the northernmost side and 9.5 feet along the easternmost. Stones in this tier are 5 to 10 feet long.

The top tier, ridiculously small in comparison with the two lower, is 1 foot in height and averages 0.6 foot in thickness. It is perpendicularly placed and flat topped. Individual stones entering into its construction average 3 feet in length.

All the large stones in this langi are fashioned from the coral reef limestone, which made it possible to hew out the truly gigantic L-shaped cornerstones. The surfacing is extraordinarily smooth when the porosity of the material used is taken into consideration. All corners except those described are formed by overlapping stones in the usual Tongan manner.

172 764 173 [643] There is no surface evidence of vaults in the langi. Tradition states that it was built by the Tui Tonga Uluakimata I, otherwise known as Telea. According to one story, Telea was drowned and his body never recovered; according to another, he is buried in this langi. The great stones are said to have been carried to Tonga from Uvea on an immense sailing boat called *Lomipeau* (13, p. 67). Uvea is a volcanic island while the stone used in the langi is coral, identical in every way to that of the reef exposures along the nearby coast.

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27. Pangai (A-meeting-place) on the outskirts of the town of Feletoa, Vavau, between the two moats protecting the eastern outer wall of the old fortress (p. 82).

[177] At first sight this langi appeared to be a Type A structure. However, closer examination disclosed fragmentary portions of three tier walls. The unusual state of ruin characterizing this structure is due to the fact that many stones have recently been removed for building purposes by natives under European influence. This is the only known example of such vandalism in Tonga, and is in no way compatible with the known native attitude toward these monuments.

The dilapidated condition of the langi made it impossible to obtain a complete series of accurate measurements. The mound is now 10 feet high and the bottom platform was originally about 100 feet square. The stones in the retaining wall of the bottom tier are about 2 feet high, those in the top tier about 1.7 feet. The largest stone seen, in the bottom tier, measured 2 feet (apparent height) by 5 feet by 0.8 foot. As a stone adjoining this one had been quite recently removed, the depth to which it had been buried in the earth to give it foundation was easily determined as 2.5 feet, giving the stone a true height of 4.5 feet. A large dressed stone found lying in the bottom of the innermost moat of the fortification, 20 yards from the langi, measured 6 feet in length, 4 feet in width, and 1.1 feet in thickness. 172 764

No surface evidence of a vault was apparent. Tradition says that a Tui Tonga Fefine named Taemoemimi and the Tui Tonga Pau are buried here. One account has it that the Tui Tonga Ulukalala II also rests in this langi, but this contention is stoutly denied by others. According to Kalaota, the last burial in Pangai was that of Foanuinuiava, the father of the last Tui Tonga, Laufilitonga. 172 173 764 643

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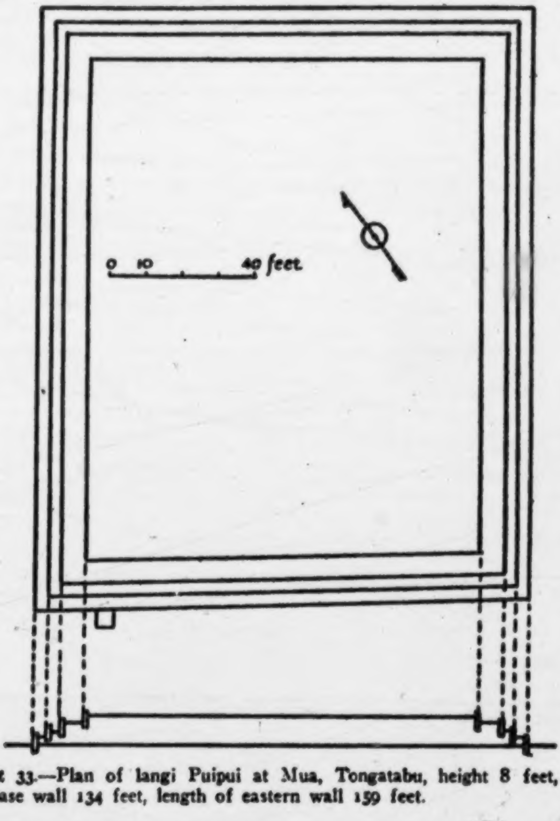

FIGURE 33.—Plan of langi Puipui at Mua, Tongatabu, height 8 feet, length of southern base wall 134 feet, length of eastern wall 159 feet.

28. Puipui, also known as Mau (To-receive), at Mua, Tongatabu, Type E (fig. 33; Pl. IV, B).

Puipui is a four-tiered structure. The retaining wall of the bottom tier is 2.8 feet in apparent height, and that of the second tier, inset 3.5 feet from the outer surface

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of the bottom tier, is 2.6 feet. The wall of the third tier, inset 3.1 feet from the outer surface of the second tier, has an apparent height of 2.5 feet. The wall of the top tier, inset 6.5 feet from the outer surface of tier three, has an apparent height of 1.8 feet. The retaining walls range in thickness from 0.5 foot to 1.8 feet, each of the upper tier walls is somewhat narrower than the lower preceding wall.

The stones in the walls are 6 to 18 feet in length. The largest is 18 feet long, with an apparent height of 2.7 feet and a thickness of 1.7 feet. Another large stone is 13 feet in length, 2.7 feet in apparent height and 2.4 feet in thickness. A third large stone is 11.5 feet in length, 2.7 feet in apparent height, and 2.7 feet in thickness. The name Tuituiholku applied to some stone in this langi may refer to one of these large stones.

The technique of workmanship exhibited by this langi is comparatively good. The corners are formed by overlapping stones placed without reference to uniformity. One stone in the wall of the topmost tier has a peculiar shape. At the base it is 1 foot thick, but abruptly diminishes toward the top to a thickness of 0.5 foot. The middle of the superior edge of this stone is marked by a transverse semicircular depression 0.3 foot in depth and 0.7 foot in width.

Near the southwest corner of the langi is a paved approach consisting of a rectangular area about 5 feet square adjoining the wall of the bottom tier, and paved with small roughly shaped fragments of slab stone. There are no apparent indications of vaults and no records of burials.

29. Siapua at Tungua, Haapai, 6 feet north of langi Mounga, Type E.

Siapua is a two-tiered structure, with a base measuring 75 feet along the western wall and 55 feet along the southern, and a height of 2.5 feet. The retaining walls of the bottom tier are 1.3 feet high. The wall of the top tier, inset 3 feet from the outer surface of the bottom tier, is 1.2 feet high. The stones comprising the walls average 3 feet in length and are 0.5 foot to 0.7 foot in thickness. The workmanship is marked by smoothly dressed surfaces that meet in sharply defined angles. The stones meet end to end with nice exactness. The corners are formed by overlapping cornerstones, There is no apparent surface evidence of vaults. This langi is said to be the burial place of the family of Tuihaateiho, closely related to the Tamaha Mounga.

30. Sinai (probably a recent makeshift for a name forgotten) called also Sinaitakalalangileka (Sinai-lying-in-little-langi) in Mua, Tongatabu, Type D.

Sinai measures 44.3 feet along the southern wall and 55.6 feet along the eastern. The top of the retaining wall and of the flat platform stand 1 foot above the surrounding land. The stones of the retaining wall average 2 feet in length and are 0.4 foot to 0.5 foot in thickness. The largest is 3.5 feet long, 0.4 foot thick and has an apparent height of 1.5 feet. The workmanship is relatively good. The cornerstones overlap in the usual manner. There are no surface indications of a vault, but Sinai, the daughter of Tui Tonga Uluakimata I, is said to be buried here.

31. Taetaea (Inaccessible) in Mua, Tongatabu, Type D.

Taetaea measures 88 feet along its southern side and 69.7 feet along the eastern side. The platform stands 3.2 feet above the surrounding land. The stones of the retaining wall are 0.6 foot to 0.8 foot in thickness and 3 to 4 feet in length. They are dressed and matched with exceptional care. The largest stone, 7 feet long and 0.8 foot thick, may be the stone bearing the name Hakelukuanganavu (Place-of-lime-mixing) which is mentioned in connection with the langi. The corners are formed by a haphazard overlapping of cornerstones. However, a stone at the northeast corner is mortised into the side of the opposing overlapping cornerstone to a depth of 0.2 foot. 172

Taetaea is said to be the burial place of the Tuihaapula family and to have been used as such quite recently. No external evidence of vaults was apparent. 764

32. Tamatiu is reported to be a langi situated somewhere in Mua, Tongatabu, but its exact location could not be determined. It is probably one of the unidentified structures described on page 60.

33. Tamatou (Child-of-tou-wood), near Mahaunga, Tongatabu, Type E.

Tamatou consists of two tiers. The base of the southeast side measures 88 feet; its southwest side, 75 feet. Its top platform is 3.2 feet above the level of the surrounding land. The retaining wall of the bottom tier has an apparent height of 2.5 feet and is 0.8 foot thick; that of the top tier, inset 4.6 feet from the outer surface of the bottom tier, has an apparent height of 1.7 feet and is 0.7 foot thick. The stones in the retaining walls average 6 feet in length. They are dressed with unusual care and matched with exactitude. The corners are formed in the usual manner.

Excavation in the langi failed to disclose a stone vault (p. 113), and tradition has it that no human remains are buried here (13, p. 55). The Tui Tonga Tamatou was a block of toa wood (*Casuarina*), or perhaps a wooden doll, the toy of the child prince who was to succeed to the title. The child, when told that he was to become the Tui Tonga, displayed characteristic princely perversity and insisted that his toy, the piece of wood, was the new Tui Tonga. The will of so great a chieftain, it would seem, was not to be contested, so the piece of wood was recognized as the king. Later, when the child assumed a more reasonable attitude, perhaps grown sufficiently old to see the folly of his action, the wooden Tui Tonga was declared dead and buried in the langi which bears its name. 173 643 [172 764]

34. Tauhakeleve (Get-ashore-at-once) is a langi name recorded in some traditional accounts in possession of Prince Tungi. It is described as a one-tiered structure and is probably one of the Lapaha group on Tongatabu. 172 764

35. Tauhala, in Mua, Tongatabu, Type D (fig. 34).

The retaining walls of Tauhala, built entirely of unusually large stones, are 0.7 foot to 1.3 feet in thickness. The stones average 10 feet in length. A stone on the east side of the southeast corner has an apparent height of 4.8 feet, and is 1.3 feet thick and 18.8 feet long. Another, near the center of the easternmost side, of average height and thickness, is 16.7 feet long. The largest stone in the structure, placed near the center of the westernmost wall, is 7.6 feet in apparent height, and 24.6 feet long (Pl. III, *B*). It stands with monumental superiority 3 feet above the adjoining stones and above the top of the great platform. At its top edge the stone is only 1 foot thick, but at the point of contact between the inner surface of the stone and the top of the platform it is 2 feet thick. Thus the stone seems first to have been placed in position in the wall and later to have been dressed down to make its upper portion conform in width with adjoining stones in the wall.

The surfacing of the stones is not uniformly smooth. Some are carefully dressed, others roughly, but all the stones are carefully and neatly matched throughout, and the cornerstones overlap in the usual haphazard manner. There are incised figures on the westernmost side of the retaining wall (p. 79). There is no surface evidence of vaults. No tradition concerning burials was heard.

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36. Tauatonga, in Mua, Tongatabu, Type D.

Tauatonga is probably the name of the structure here described. Some reference was found to a three-tiered Tauatonga, but no structure of this type could be found that was not accounted for under some other well known appellation.

The western wall of Tauatonga measures 77.8 feet; the northern wall, 71 feet; the walls and enclosed platform are 2 feet high. The stones in the wall average 0.7 foot in thickness and 3 feet in length. One stone has a length of 5.5 feet and a thickness of 0.9 foot. The stone dressing is normally smooth and the stones meet with an exact nicety, end to end. The corner stones overlap in the usual manner.

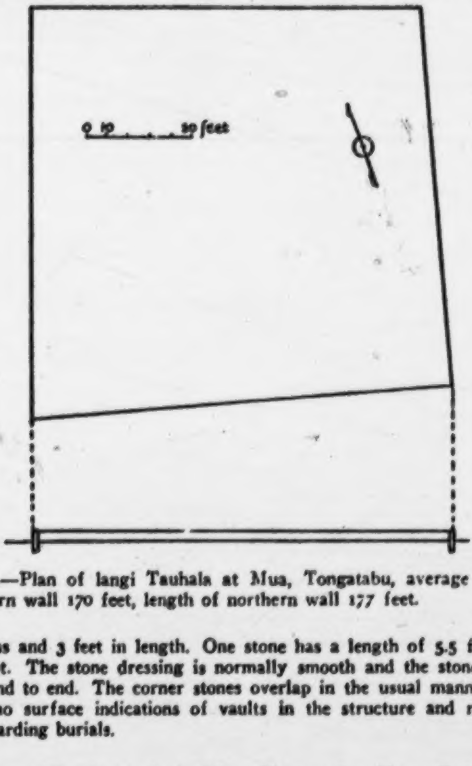

FIGURE 34.—Plan of langi Tauhala at Mua, Tongatabu, average height 4.7 feet, length of eastern wall 170 feet, length of northern wall 177 feet.

There is no surface indications of vaults in the structure and nothing could be determined regarding burials.

37. Tafaua (Cut-in-two), in Mua, Tongatabu, Type C (fig. 35).

Tafaua consists primarily of an oblong mound of earth with a circular top and a rectangular base. A rectangular stone wall surrounds the mound intermediate between its top and bottom, its faces parallel to tne margins of the mound base 14 feet distant. This wall seems to serve a decorative rather than a practical purpose and probably explains the name "Cut-in-two," as it separates the upper half of the mound from the lower. Most of the stones in the wall are 3 to 4 feet long; one is 7 feet long. The stones are smoothly dressed and neatly matched and fitted together. The corners are formed by stones overlapping in the usual manner. Two stones in the structure are said to be named Vuna and Mataele, but no one was found who was able to point them out.

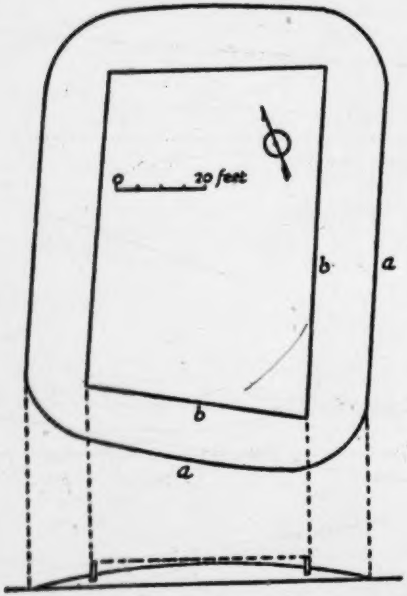

FIGURE 35

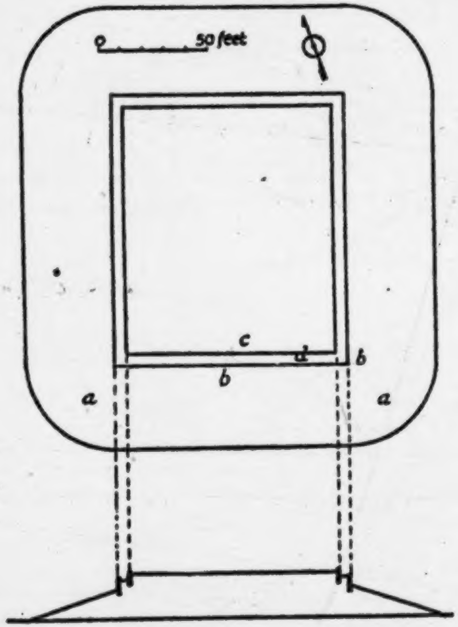

FIGURE 36

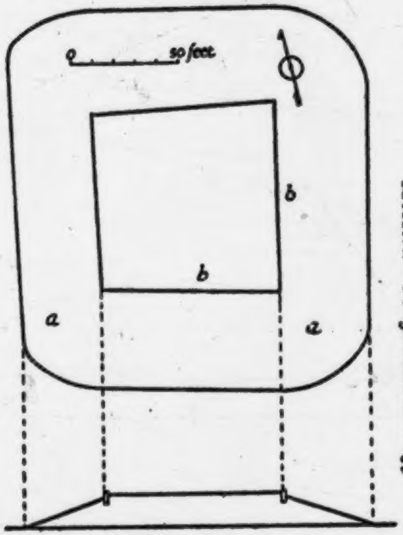

FIGURE 37

FIGURE 35.—Plan of langi Tafaua at Mua, Tongatabu: *a*, margin of mound, 103 feet long, 76.7 feet wide, 4 feet high; *b*, stone wall, length 75 feet on eastern side, 48.7 feet long on northern side, average height 2.5 feet.

FIGURE 36.—Plan of langi Tuofefafa: *a*, foundation mound, 200 feet long, 185 feet wide, 9 feet high; *b*, retaining wall, length 122 feet on western side, 105 feet on northern side, height 4 feet; *c*, retaining wall 2.4 feet high; *d*, top of first tier, 5.8 feet wide.

FIGURE 37.—Plan of langi Tuoteau at Mua, Tongatabu: *a*, truncated mound 175 feet long, 160 feet wide and 12.7 feet high; *b*, wall of platform 87 feet long on eastern side, 80.7 feet long on southern side, 2.3 feet high.

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No surface evidence of a vault is apparent. Two individuals, Tokemoana and Tafolo, are said to be buried here.

38. Tongamanatu (Anxious-Tonga), reported to be in Mua, Tongatabu. No structure with that name was identified. It may be one of the langis for which names could not be found.

39. Tuofefafa, or Fanakavakilangi, in Mua, Tongatabu, Type E (fig. 36).

According to Prince Tungi and to Collocott (3), *fefafa* may be translated in three ways: (a) something small close to something large; (b) a man buried in a small langi close to a large adjoining langi; (c) two men buried in one grave, one superposed upon the other.

Tuofefafa is a two-tiered structure resting upon the flat top of an artificial truncated pyramid of earth, with a rectangular base. The combined height of the structure is 15 feet.

The foundation mound is a Type B structure with sides that slope up from a ditch, which partly surrounds it, to the stone walled platform of the superstructure. The base of the mound is 35 to 40 feet from the outer walls of the superposed platforms. The stones in the wall are 6 to 7 feet long and 0.7 foot to 1.1 feet thick. The largest stone, near the northwest corner, is 18.5 feet in length, 4.6 feet in apparent height, and 3.2 feet in thickness. The type of workmanship exhibited by the stone dressing and fitting is relatively good. The corner stones are formed in the usual manner.

Tuipulotu I, Tokemoana I, and Laofilitonga are said to be buried in Tuofefafa, the last named during historical times.

40. Tuoteau (One-hundred-times) in Mua, Tongatabu, Type D structure superposed on a flat topped Type B structure (fig. 37).

The margin of the truncated mound on which Tuoteau rests is 40 to 46 feet from the bottom of the platform's retaining wall. The total height of mound and superstructure is 15 feet, not allowing for a shallow ditch which appears originally to have entirely surrounded the mound.

The individual stones in the platform wall average 5 feet in length and 0.6 foot in thickness. The largest stone, situated near the southwest corner, is 13.6 feet long, 5 feet in apparent height, and 1 foot to 1.5 feet thick. The walls are characterized by normally smooth dressing and stone fitting. The corners are formed by the usual haphazard overlapping of corner stones. Tuoteau is the resting place of Tuipulotu II, for whom it was erected by his son, the Tui Tonga Pau. A stone named Pau is in the structure.

41. The Loamanu group (fig. 38). Of the langis situated at Mua, Tongatabu, four known to have been built as burial sites for the Tui Haatakalaua family are sometimes collectively called Loamanu. They are arranged in a row extending approximately north and south. The southernmost is known as Falepulemaalo. Next in order comes Loamanu, then Faletuipapai (House-of-Tuipapai), and a fourth structure which could not be identified by name and is here called Loamanu IV.

41 a. Falepulemaalo, Type D (fig. 38, *a*).

Adjoining Falepulemaalo is a platform 64.5 feet long and 56 feet wide. The retaining walls of both the main and the adjoining platform average 0.8 foot in thickness.

The stones in the walls are 4.5 to 6 feet in length. Ascending to the top of the main platform from a central point on the western side is an inclined approach consisting of two inclined parallel retaining walls 6 feet apart made of upright slabs which slant upwards from the ground level to within 0.7 foot of the top of the platform which they meet at right angles. These walls are 0.8 foot thick, and the interval between them is filled with earth and rubble, and paved with large, flat, roughly rectangular stone slabs. Another approach on the eastern side of the main platform consists of a 172 764

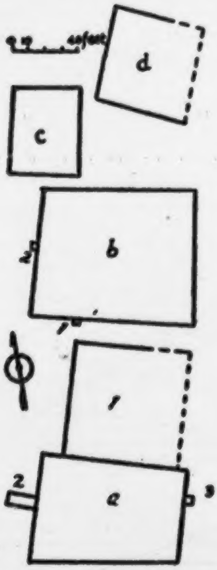

FIGURE 38.—Plan of Loamanu group of langis at Mua, Tongatabu: *a*, Falepulemaalo, length southern side 85.5 feet, western side 60 feet, height 2.4 feet—1, adjoining platform 64.5 feet long, 56 feet wide, 2.4 feet high; 2, roadway 16 feet long—; 3, stone slab 4.5 feet long, 4 feet wide; *b*, Loamanu, length southern side 92.5 feet, length western side 75 feet, average height 2 feet—; 1, stone step 4 feet long, 3 feet wide, 0.6 to 0.7 foot thick; 2, fragments of stone—; *c*, Faletuipapai, length eastern side 51 feet, length southern side 39.5 feet, height 0.7 to 0.8 foot; *d*, Loamanu IV, length of western wall 55 feet, height 2 feet.

single squared slab of stone laid flat and adjoining the wall of the langi. In thickness the slab varies from 0.8 foot at the wall to 0.4 foot at its outermost edge, thus giving the slab a gentle upward slope. All stones comprising the retaining wall are very smoothly dressed and fitted together. The corners are formed by overlapping; the eastern and western cornerstones overlapping the opposing northern and southern stones. On the eastern side of the main platform the cornerstones of the northern and southern walls are shallowly mortised into the respective opposing cornerstones of the east wall. Tungi, the grandfather of Prince Tungi, consort to the present queen of Tonga, is buried in this langi, which according to all testimony was built at a recent historical date. [175]

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41 b. Loamanu, Type D (fig. 38, *b*).

Loamanu bears evidence of being the oldest structure in the Loamanu group, which may account for the application of the name to the entire group. The retaining walls average 2 feet in apparent height and 0.7 foot to 1.1 feet in thickness. At the northwest and southwest corners where the earth has been partially removed from the foot of the wall, the apparent height of the wall is, respectively, 3.1 and 3.2 feet. The stones in the wall average 5 feet in length. The longest stone, now lying prone near the northwest corner, is 14 feet long, 4.5 feet wide, and 2 feet thick. The breadth of this stone, compared with the apparent height of the adjacent wall, indicates that fully half of the wall is buried to give it foundation. An approach on the southern side of the langi consists of a stone slab, forming a low step to the top of the platform. On the western side of the langi there was probably a similar approach, now represented by a number of suggestively grouped stone fragments. The surfacing and jointing of stone elements are smoothly executed. The corners are formed by one cornerstone overlapping the opposing cornerstone, without reference to uniformity. There is no surface indication of vaults, nor was any information obtained regarding burials.

41 c. Faletuipapai, Type D (fig. 38, *c*).

The stone retaining wall of Faletuipapai is 0.2 to 0.6 feet in thickness, the stones comprising it average 2 feet in length. Those remaining intact are smoothly dressed and carefully fitted together. Parts of the wall, including all four corners, are broken by missing elements. Near the northeast corner is a large stone, 6.5 feet long, 0.8 foot thick, and with an apparent height of 1.7 feet. There is no surface indication of vaults. No information could be obtained regarding traditional burials.

41 d. Loamanu IV (known to some as Loani's cemetery), Type D (fig. 38, *d*).

Loamanu IV is in so poor a state of preservation that the walls of the entire eastern half cannot be located save by a rather doubtfully accurate projection. In the westernmost wall, the only one left entirely intact, the stone dressing and fitting is similar to that of adjacent Loamanu structures. As the name implies, members of the family of Loani are said to be buried here.

UNNAMED LANGIS

The following three small langis, for which informants failed to supply names, were seen in the Lapaha group of Mua, Tongatabu. One of them is probably Nukulau.

42. Unnamed langi situated between the langis Taetaea, Tafaua, and Leka. Type D.

The easternmost wall is 55 feet long; the northernmost wall, 42.5 feet long. The average height of walls and platform is 1 foot. The dressed stones of the retaining walls are 3 to 6 feet long and 0.5 foot to 0.7 foot thick. The stone surfacing and fitting are of average merit. Corners are formed by one cornerstone overlapping the end of the opposing cornerstone, with either stone holding the outside position. There are no surface indications of vaults.

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43. Unnamed langi situated between Nukulau and Faapite, Type D.

The westernmost wall is 50.5 feet in length; the southernmost wall, 37 feet. The retaining wall averages 0.9 foot in height and is from 0.7 to 1 foot thick. The convexly rounded top platform stands 2.5 feet above the surrounding land level. The stone surfacing and fitting are of average merit. The corners show an unusual degree of what appears to be experimentation toward the strengthening of the weak overlapping structure. Several crude types of mortising are attempted. There are no surface indications of vaults.

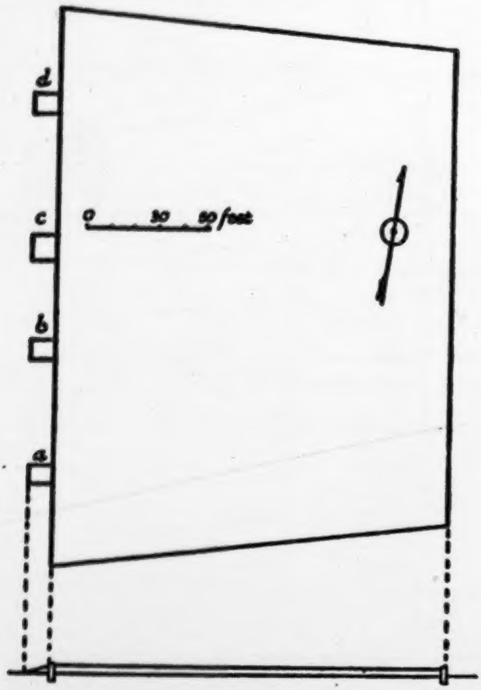

FIGURE 39.—Plan of unnamed langi, Uiha, Haapai, 190 feet long, 65 feet wide, 2 to 3.8 feet high: *a*, approach 10 feet long, 7 feet wide; *b*, approach 10 feet long, 7.8 feet wide; *c*, approach 10 feet long, 10.5 feet wide; *d*, approach 10 feet long, 7.5 feet wide.

44. Unnamed langi situated 44 feet west of Faapite and south of Matuatonga, Type D.

The southernmost wall is 29.5 feet long; the westernmost wall, 40 feet long. The retaining walls average 0.8 foot in height and 0.7 foot in thickness. The stones comprising the wall are 2 to 4 feet long. They are dressed and fitted with somewhat less

172 than average merit. Corners are formed in the usual haphazard manner of overlapping. There are no surface indications of vaults.

764

45. Unnamed langi on the island of Uiha, Haapai, Type D (fig. 39).

The stones in the wall are 4 to 12.3 feet long and 0.6 to 1 foot thick. The western side of the langi is distinguished by (a) having the largest stones, (b) by relatively superior stone dressing and fitting, much of it accomplished through the use of steel tools, (c) by the presence of a peculiar monumental stone on the southwest corner, 0.9 foot wide, 0.7 foot thick and 3 feet high, and (d) by the presence of four approaches, spaced at respective intervals of 35.6, 46, 32, and 48 feet from the northwest corner. All four are alike in structure. The perpendicular sides are fashioned of large dressed slabs of stone, the top edges cut to the angle of slope (about 20°) determined by the height of the retaining wall. The surface of each approach is paved with slabs, slab fragments, gravel, or all materials combined. The inclined way extends from the ground level to within a few inches of the top of the retaining wall.

The top of the langi is paved with coral gravel, save where modern graves and grave monuments interrupt. The langi contains several stone vaults and is used as a cemetery by the recognized descendants of those for whom it was originally built. Many of the burials are quite recent. The workmanship exhibited by the structure is such as to warrant the conclusion that it is either comparatively new or has been extensively repaired in historic times.

MONUMENTS

THE HAAMONGAAMAUI

172
349

Perhaps the most imposing of Tonga's ancient monuments is the great trilithon near Kolonga, Tongatabu, commonly called the Haamonga, or more fully, Haamongaamaui (Pl. V).

The trilithon consists of two large upright stones with a connecting stone laid horizontally across and mortised into the tops of the upright pieces. All three stones are carefully squared and smoothly surfaced pieces of non-stratified coral limestone. The porosity of this material prevents any fine smoothing, but all surfaces are decidedly flat and all interfacial angles acutely sharp (fig. 40).

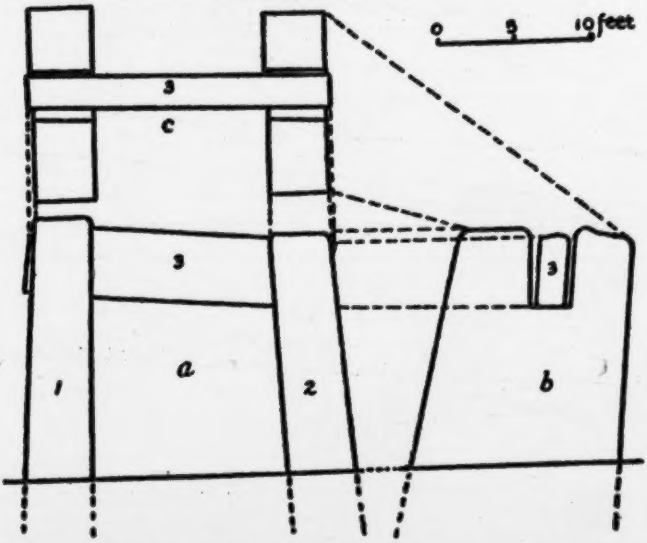

FIGURE 40.—Plan of the trilithon, Haamongaamaui: *a*, side view; *b*, end view; *c*, top view—1, western upright 17 feet high, 14 feet at base, 12 feet wide at top, 4.5 feet in average thickness; 2, eastern upright 15.5 feet high, 13.5 feet wide at base, 11.3 feet wide at top, 4.5 feet in average thickness; 3, lintel, 19 feet long, 4.5 feet wide, 2 feet thick.

The archway faces north and south, the lintel-piece extending almost due east-west. The larger western upright piece is almost vertical on its northern, eastern and western faces but its southern face has a decided inward slant from the bottom toward the top. Of the smaller eastern upright the eastern and western faces are nearly vertical; the southern face has a decided inward slant from bottom to top; the northern face, a slight outward slant. The whole structure has a marked list toward the north. An interval of 12.5 feet separates the upright pieces.

> 172 349 A cross section of each of the two shafts and of the lintel approaches a rectangular parallelogram. The upright pieces are placed with their long lateral faces roughly parallel to each other and approximately extending north-south. They rise from their foundations gradually tapering inward toward the top, a feature more accentuated in the western column.
>
> At the approximate center of each upright piece is a vertical square-cut mortise of sufficient width to allow the lintel to slip into it edgewise with several inches of play on either side, and of sufficient depth to bring the top edge of the lintel to a common plane with the tops of the columns. This common plane is not level, as the western column is 1.5 feet higher than the eastern. The ends of the lintel are practically even with the outer sides of the uprights.

The central upper surface of the lintel is marked by a shallow circular depression of small diameter, smoothly regular in outline and obviously artificial.

It was determined by excavations at selected places that the bases of the upright pieces extend at least two feet into the ground. Fear that the structure would fall prevented further exposure of the foundations.

[127] There is an unpublished account of excavations made by Mr. Ames, the first Wesleyan teacher in this district, to determine the depth of the foundations. According to his testimony, as supported by eye witnesses, the base of each upright is mortised into limestone bedrock and the space left between mortise and tenon packed with small limestone chips. A fear that the removal of these chips would weaken the stability of the structure prevented his determining the true depth to which the great shafts of stone penetrate.

That the uprights are well anchored is shown by the fact that the massive roots of a large *ovava* tree shaped themselves about the base of the western stone shaft, without budging its position. King George I Tupou had the tree removed in order to preserve the monument. It has been estimated that the visible portions of the two uprights weigh each between 30 and 40 tons.

172 349 173 644 [115] The following account of the origin and construction of the Haamonga was obtained from an old chieftain, Tamale of Haameniuli, Tongatabu, who is the direct descendant in a long line of chieftains closely associated with the Tui Tonga and is fulfilling the duty of keeping in memory the great deeds of the kings. The peculiar official duties of this family are said to have been inaugurated at a time preceding the reign of Tuitatui.

> 172 349 173 643 Tuitatui was the Tui Tonga who built the trilithon. That was at a time preceding the removal of the king's house to Lapaha (now Mua). Tuitatui had established himself at Heketa near the site of the Haamonga. The trilithon was erected as a monument to his two sons; Lafa was the elder and Talaihaapepe the younger. The structure had the symbolical significance of representing the two sons in the upright shafts, the eastern and western columns respectively symbolizing the elder and younger son. The lintel uniting the columns represented the inseparable bond of brotherhood uniting these two great men. It seems that the Tui Tonga was afraid that there would be a rupture between his sons after he was gone and erected the monument as a lasting protest against such a possibility.

> In this manner was the Haamonga built. All the common men of Heketa and many 172
> men from the outlying districts of Tongatabu were assembled. The stones, of a variety 173
> called *okeha* (coral limestone), were cut out from the cliff face on the shoreline just
> north of the site selected for the structure. This is the kind of stone that forms the 349
> bedrock for all this part of the island. When the three great stones had been shaped,
> they were dragged over wooden skids, by means of heavy ropes and the combined 333
> muscular power of many men, to the construction site. The two pits where the columns [483]
> were to stand were then dug. There followed the erecting of a perpendicular retaining
> wall of trees and brush, situated closely parallel to the line of the two excavations.
> This wall constituted the vertical front of an earthen mound or inclined plane of a height
> sufficient to serve in the following manner. The two uprights were dragged over skids, 172
> endwise and prone on edge, up the slope of the artificial incline. Besides the wooden
> skids and ropes, the implements employed included blocking wedges and levers, to be used 173
> in emergencies. At the top of the incline the stones were projected over the edge of 349
> the vertical retaining wall until nicely balanced, and then carefully directed to fall
> endwise, while guided by ropes, into the pits prepared for them. This done, the lintel 333
> was transported up the incline in the same manner, but with the lateral edge foremost, 483
> and directed to drop into the mortises in the tops of the upright pieces. Then the earthen
> incline was removed, leaving the trilithon in position. A large irregular pile of earth
> in the near neighborhood of the monument is said to be the material removed in leveling 172
> the construction mound.
> 173

Tamale's account of origin and construction is so detailed and logical, 349
coming as it does from a very old man who neither speaks nor reads any [115]
language other than his own and who is highly respected by natives and Europeans alike as an authority on the traditional history of his district, that it must be accepted as a weighty part of the available evidence.

The name Haamongaamaui (*haamonga,* the burden carried on a carrying-stick called *haamo; a,* of; Maui, a god and culture hero) is probably derived from the myth according to which Maui Kisikisi brought the trilithon from Uvea to Tonga, carrying it on his shoulders. It has been argued that this myth indicates that the stones constituting the structure were brought from Uvea. While such a feat may have been possible, a preponderance of the available evidence stands against it. It is a common thing in Tonga to find mythological origins ascribed to things of known historical origin. Furthermore, limestone employed in the structure is identical with the country rock immediately surrounding the monument, while Uvea is basicly volcanic in formation.

It is hard to see just how the trilithon would tend to decrease the possibility of dissension between the two sons of Tuitatui without including a belief in sympathetic magic. The two columns were named after the two sons and it is possible that the belief existed that as long as the two representations of the brothers were united by the lintel-piece, there could be no breaking of brotherly relations. According to Gifford (11) Tuitatui reigned in the early part of the eleventh century.

Prince Tungi believes that the Haamonga was erected for playing a game [345]
called *kopai kolo*. The existing structure may have been used in playing

172 this game, but it is unlikely that it was built for such a purpose. The game
349 was played by children and it is hard to conceive of the laborious construction
173 of such an imposing piece of work to accommodate the playtime fancy of
[345] children.

The small basin cut into the top of the lintel is not explained. Tamale was positive that it was cut out long after the building of the monument, but he could not suggest its intended purpose.

OTHER MONUMENTS

There are said to be two stone monoliths on the island of Niuatoputapu
which, according to tradition, were erected by the culture hero Maui. They
172 are named Fakafafa and Tauloto. Nothing of their origin or purpose could
be ascertained.

349 Monumental stones in the retaining walls of many langis are described on pp. 36-62.

DISCUSSION OF STONE STRUCTURES

ORIGIN OF STRUCTURES

There is no reasonable doubt that the dressed stone structures of Tonga, 172
the stone-walled *esi* and langis and the trilithon, are the products of the
present inhabiting race. There is not the slightest evidence warranting the
assignment of an age to any of these structures which would be incompatable
with such a conclusion. The technique of stone dressing is quite within the
limits of Tongan talent and equipment. The necessary methods of quarrying,
transportation and erection harmonize perfectly with the state of primitive
Tongan culture. The necessary organization of man-power required in the
undertaking of such huge constructive projects was the logical result of
centralized power vested in the single head of political and social Tonga, the
Tui Tonga. Local tradition reflects not the slightest doubt as to Tongan 172
origin. Native accounts of the building and use of these structures have the
practical and accurate sound of historical records; most of them are sur- 173
prisingly free from even the most obscure mythological associations. The
mythical accounts are easily separated from historical accounts and are
patently free from historical purpose. Some of these structures were actually 172
built in historic times under the observation of reliable European witnesses. 175
Many of them are still used from time to time in their traditional capacity.

This impressive ethnological evidence justifies the treatment of these inter- 172
esting monuments as the work of the immediate ancestors of the present
population of the archipelago.

RELATIVE AGE OF LANGIS 127

During the search for information regarding specific langis, a list of named
langis on Tongatabu, written in Tongan, was placed at my disposal. In it are
a few historical notes. The true source of this material is rather doubtful.
It was first seen in a notebook in the possession of Uhatafe, an old man of 127
Mua, Tongatabu, who is directly descended from a line of high matapules 217
formerly in the service of the Tui Tonga. Uhatafe stated that he had
written the notes when young, having gotten the information from his father,
who had in turn received it from his father, and so on. Identically the same 127
list was later found in a magazine printed in Tongan by the Catholic mission
at Mua. Whether or not this printed version had been copied from Uhatafe's
book could not be determined. The following is a translation of the manu- 764
script: 173

> The book of succession of the different langis, and information concerning those 172
> who made them; their names are also given.
>
> The different langis are known, but as to who made each and who is buried there,
> some are [known] and others not.

764 1. The first langi, Fangaloso, situated at Navai, town of Lufe.

173 2. And the langi Folokamanu which stands at Mataliku on the outskirts of the town of Pea.

3. And the langi Matamoana which stands between Tufamahina and Talangaholova.

172 4. And the langi Makamaka which stands between Fuamotu and the *api* Haavaka. This langi is where a pregnant Tui Tonga Fefine, she who was nicknamed Fuamotu Tofamoealo by Mohulamu.

[643] 5 and 6. Then he [the Tui Tonga] transferred to Hahake and two langis were built, that of Heketa and the langi Moungalafa, and that was the work of Tui Tonga Tuitatui.

[643] And when the king Tukuaho was murdered, the grandfather of Tungi, who was named Mulikihaamea, became the Tui Tonga. He was the Tui Tonga Maulupekotofa, and the Tui Tonga Pau his brother. Their father was Tuipulotu II. They had different mothers.

Names of the langis of Mua:

1. Langi Tuoteau.
2. Langi Tauatonga.
3. Langi Matuatonga (or Katoa).
4. Langi Tofaua, the stone Kopau (or Luani).
5. Langi Tauhala.
6. Langi Leka, the stone Tuituiohu.
8. Langi Taetaea.
9. Langi Tuofefafa. (Here are buried Tuipulotu and Tokemoana.)
10. Langi Paepaeotelea.
12. Langi Namoala.
13. Nakulukilangi.
14. Langi Tongamanatu.
15. Langalangafehi.
16. Langi Koolonamu.
17. Langi Lili.
18. Langi Olomaloa.
19. Langi Faletoonga.
20. Langi Tamatie.

[127] The following additions to this data were gleaned from material furnished by Prince Tungi, translated by Rev. E. E. V. Collocott.

Langi Leka. Four terraces. Work of Tulunga.

Langi Tafaua. One terrace. Two buried there, Tokemoana and Tafolo. There stand the stones Vuna and Mataele.

Langi Tauatonga. Three terraces.

Langi Taetaea. There stands the stone Hakalukuanganava of Tuihaapula. One terrace.

Langi Tauhakelevu. One terrace.

Langi Mau. Four terraces. There stands the named stone Tuituiohu.

Langi Katoa. Five terraces. One named stone there.

Langi Tuoteau. One terrace. Tuipulotu there.

Langi Foou. Two terraces. The stone Pau, a volcanic stone.

Langi Paepaeotelea. Three terraces.

Langi Namoala. Three terraces. This is the langi of the woman Finau. Her mother, Latutama, lamented—and this is her lament: Come ye and carry out the burial.

Uhatafe's list of langis certainly pretends to be chronologically arranged 172 in order of building. Upon examination, it was found that the first on the 764 list, Fangaloso, was a roughly circular mound of earth and sand 6 feet high 172 and 65 feet in diameter. The second and third on the list, Folokamanu and 764 Matamoana, were of exactly the same type as Fangaloso. Excavations in Folokamanu failed to discover a stone vault (p. 114). Matamoana is said to have a vault, and some broken fragments of stone lying about the mound are pointed out by the natives as chips that were broken from the vault slabs when they were dressed for placement in the structure.

Makamaka, fourth on the list, is a higher order of structure. It is also of earth but has a squared outline with rounded corners. It is 4 feet in height with a maximum lateral dimension of 90 feet. Its shape is further complicated by the presence of a surrounding ditch 2 to 4 feet in depth and averaging 14 feet in width. The superior surface of the mound is large and flat. There are a few fragments of coral limestone lying about its base.

The fifth and sixth on the list, Heketa and Moungalafa, are well developed stone-terraced structures. Heketa has three terraces, Moungalafa but one, but the stones of this single terrace are very large and rather neatly dressed and matched.

In the Mua list the first three langis named constitute three of the four stone langis within the ancient fortification of Lapaha. The first of these structures is peculiar in that it is built upon a high artificial foundation mound. None of the three is quite so well built as Heketa.

The next four langis on the list are situated at the southern end of the double row of langis north of and outside the fortifications of Lapaha. They also are stone-terraced structures. Of these, Leka, a four-terraced structure, is one of the most imposing examples of stone platforms in the group, and Tauhala covers a base area of over 30,000 square feet, in this respect surpassing all other Tongan langis.

The next in order on the list is Tuofefafa, also called Fanakavakilangi. It stands inside the fortified district of Lapaha, the fourth and last of the group of langis so situated. Like Tuoteau, the first on the list, it is built upon a high artificial foundation mound. The stonework is average in comparative merit.

The next langi listed is Paepaeotelea, representing the highest skill in stone work to be found in Tonga (p. 51). The stone faces are very exactly dressed with a degree of skill and care not observed in any other stone work in Tonga. This comparatively superior finish exists in spite of the fact that the stone employed, unstratified coral limestone, is the hardest rock used in Tongan construction work. The bottom one of three terraces, and the larger part of the second terrace, is composed entirely of stone, the units being very large. The top surface of the bottom terrace has a beveled incline from its outer edges to the foot of the second terrace. These beveled surfaces meet

172 at the corners in beautifully exact lines of contact. These characteristics are
unique features of this one langi.

764 Namoala, next on the list, lies just beside and in line with Paepaeotelea. It is a three-terraced stone structure representing a class of workmanship greatly inferior to that of its neighbor, but comparing favorably with the other langis of Mua.

Tongamanatu and Koolonamu could not be found. If they exist in Mua, they are not now known by these names.

Lili, following on the list, is a square, truncated earthen pyramid. There is no sign of stone work.

Olomaloa is a comparatively small stone-walled platform consisting of but a single tier. It is representative of the most simple type of stone-walled langi.

Faletoonga is an oval-shaped mound of earth, flat-topped, showing no trace of stone work.

Tamatiu could not be located in Mua. As many of the langis have more than one name and as the Mua list fails to mention a large number of the Mua langis, some of the unidentified names may belong to structures described under other names.

A survey of the listed facts disclosed the following interesting situation: The first four langis mentioned are mounds of earth, simply shaped save for the last one, which approaches a rectangle in lateral cross section. There follows a series of rectangular platform types with stone retaining walls, many of them pyramidal in shape with two to five terraces. The maximum in size is Tauhala, followed in turn by Telea's langi, the masterpiece of Tongan stone masonry. The remainder of the series shows a rapid deterioration which culminates in the earthen mound type exemplified in the first langi of the series.

As the list pretends to be arranged in chronological order, the facts seem to indicate a local development of the langi from a simple earthen burial mound, like the *faitoka*, to a massive, skillfully constructed, stone-walled platform, or pyramidal series of platforms. This development reaches a climax with Telea's langi and then suffers an extraordinary decline until the original earthen mound type is again in use.

172 To a certain extent this account is supported by Tongan tradition. There
are many accounts of Tui Tonga Tuitatui, including those of his removal to
173 Hahake from somewhere in western Tongatabu to establish a new capital for
764 the royal family. He is said to have built the Haamonga and the two langis
nearby, the first stone-walled langi on the list under discussion. If indeed
643 he was the first Tongan to experiment in stone structural work, he made
rapid progress, for his langis are large, complicated, and well built and the
Haamonga stands as a remarkable monument to the skill of its builders and

the imagination of its perpetrators, a work never again attempted by Tongan 172 173
stone masons. 643

Tradition then gives a detailed account of the transfer of royal headquarters [764]
from Hahake to Lapaha, the site of the present town of Mua. This
remained the home of the Tongan kings until the middle of the nineteenth
century. The fortifications surrounding Lapaha, the oldest part of Mua, [712]
are reported to have been built by one of the earliest of the Mua-dwelling
kings. This statement coincides with the small number of langis to be found 172
inside the fortification. Of the four langis in Lapaha, three are named in the 764
list where they immediately follow the Hahake langi. 173

Again, the period intervening between Tuitatui and Telea, as represented
by number of langis built, closely coincides with the same period as represented
in genealogies. Thus, there are 10 langis listed between those said to [643]
have been built by Tuitatui and that built by Telea. There were 17 Tui
Tonga between these two monarchs, but it is definitely known that more than
one king were sometimes buried in a langi.

There is then a certain amount of evidence to support the acceptance of 172
the traditional list of langis at its face value as a chronological record. The 173
decadency of type in the later structures might be explained by the parallel 764
decandency of the power of the Tui Tonga, a traditional and to some extent
historical fact. This weakening of the old dynasty of kings was well under 643
way when Cook first visited the group. Great power vested in the king, or [127]
in some other leader, was an essential factor in the building of any structure
requiring the highly organized labor necessary to the successful building of
the largest and finest of the Tongan langis.

There are, however, portions of this supposed chronology which cast 172
doubtful shadows over its chronological value. 173

In Uhatafe's list the paragraph immediately following the account of the 764
work of Tuitatui refers to the kings Tukuaho, Tuipulotu II, Maulupekotofa,
and Pau. These rulers lived about twenty-four generations after Tuitatui, 127
according to Tongan genealogies. This paragraph is therefore certainly out 643
of place in any chronological sequence of events. These same genealogies name fifteen rulers intervening between Nuitamatou, probably the last Tui Tonga to reign before the capitol was moved to Lapaha, and Telea, whereas there are only nine langis in the list assigned to this period. As explained before, there is no necessary discrepancy here. The larger of the langis are said to contain several vaults each. Some kings were also buried abroad, as stated by tradition and as supported by the presence of langis on other islands of the Tongan group. This list, however, places Tuipulotu I in the ninth Mua langi, whereas Telea's langi is number ten. Genealogical data disputes this order in naming Tuipulotu the fourth king following Telea. Of course there is the possibility that Tuipulotu was buried in a tomb belonging to one

172 of his ancestors, and that the langi might have been built before Telea's time.
173 This, however, seems improbable. Ten langis occur in the list following that
127 of Telea. There are exactly ten Tui Tonga named in genealogies following
764 Telea, but at least one of these is buried, according to tradition, on another
island and the last, Laufilitonga, was buried in historic times in one of the
643 other langi. Here again the discrepancy is not fatal to the accuracy of the list. One positive and one probable mistake in the list, however, with other detail that does not check up too well, serve to a certain extent to discredit the entire list as an accurate chronological account.

There is an apparent conflict between the Uhatafi and the Tungi records. According to Uhatafi, Tokemoana and Tuipulotu were buried in the langi Tuofefafa. According to Tungi, Tokemoana was buried in the langi Tafaua and Tuipulotu in Tuoteau. However, inasmuch as there were two kings sharing the name Tuipulotu and as it is Tuipulotu II, according to several records, who is buried in Tuoteau, and as Tokemoana may have been a family name shared alike by many succeeding family heads, the contradiction can not be positively accepted as discrediting either of the records.

DEVELOPMENT OF THE LANGI

172 There are many reasons for doubting the independent development of
333 the langi type of structure in Tonga. The abrupt appearance of highly
[764] developed stone masonry during the reign of Tuitatui may indicate an introduction of the art into Tonga at that particular time. So highly developed an art is not likely to be born within a primitive society in one generation. It requires time and experimentation to develop skilled craftsmen who could construct a Haamonga or a Heketa.

172 There is a native story which recounts the arrival in Tonga, during the
173 reign of Tuitatui, of a great foreign chieftain, presumably from Fiji. His
boat was the largest and finest which the Tongans had ever seen, and built of *fehi* (*Afzelia bijuga*) wood, previously unknown to them. From the wood of this vessel was built a *fata* (a sun shelter in the form of a wall-less house with a loft open at either end). The name Fatafehi, has been in common use in the Tui Tonga family ever since. This foreign chieftain seems to have made a great impression upon the Tongans and to have introduced several new customs and culture elements, but no mention is made
172 of his introducing the art of stone masonry. While considering the possibility of foreign influences, it may be well to note that, according to all available evidence, the best of Samoan stone structures seem to have been built by the Tongans rather than by the Samoans—a conclusion supported by both Tongan and Samoan traditions.

172 Skill in stone dressing could have been acquired gradually through a long
333 period of vault construction, thus leaving no surface evidence of a period of

experimentation preceding the first appearance of surface stonework. But 172
granting this possibility, it is hard to believe that the art of stone mortising, 333
exemplified in both the Haamonga and the stone house beams on Heketa, could have been so fully developed without previous trials. Also a simple type of terracing might be expected as the first example of surface stonework rather than the comparatively elaborate three-terraced structure represented in langi Heketa.

The leap from other Mua langis to Paepaeotelea is not so abrupt as first 172
appearances might suggest. Many of the Mua langis show bits of detail, such 764
as smooth surfacing, the use of large thick stones, and close stone fitting, that
are only slightly improved upon in Telea's langi, but where these features 333
occur as occasional and scattered bits of detail in the other structures, this one langi shows a combined and uniform adoption of them all, and at their best.

The only new outstanding features in Paepaeotelea are: (a) the bevelling of the superior surfaces of the stone terraces, and (b) the use of L-shaped stones at the corners. It may be said that the solid stone nature of the terraces constitutes a third unique feature, but a careful survey of other langis shows a not infrequent tendency towards this. Such construction is patently impossible where stratified sedimentary rock is used as the building material. The numerous horizontal planes of natural cleavage present in such rock necessarily results in narrow slabs. But the tendency prevailed, as illustrated in all the large langis, to make these slabs as thick as possible, and in one langi a single stone has a width sufficient to extend more than half way across the width of a terrace. The use of nonstratified stone in Paepaeotelea made it possible to give the terrace walls any width desired, and the desired width would seem to have been the maximum width.

Likewise, it would be impossible to cut L-shaped cornerstones from the 172
available stratified rock. On the other hand, experience must have taught the 333
builders that L-corners are highly desirable as cleft corners have a tendency to spread under the weight of loose water-soaked soil and the outward
pressure of large trees growing upon the structures. It was not entirely a [396]
new idea; its use in the construction of composite wooden boats (17) had undoubtedly long been in vogue. The use of nonstratified limestone made it possible to apply the well known principle to stone construction.

Bevelling was a decorative method well understood by boat builders. It [396]
is not strange that it should have been adopted sooner or later by stone masons. The use of L-shaped cornerstones made the pleasing effects of bevelling more prominent, and supplies a possible reason for its adoption on the occasion of erecting this particular structure.

A discussion of the probability of an independent invention of the stone 172
vault used in Tonga must wait for a fuller knowledge of stone vaults else- 764
171

172 where in the Pacific. It would be remarkable if Tonga and some distant
764 Oceanic group should have independently developed the same type of vault.
171 The presence of vaults in Fiji similar to those in Tonga is undoubtedly due
to diffusion, but the direction of this diffusion is not too certainly known.

A platform or terraced type of stone structure, used for various purposes
172 and designated by various names, has been reported from many parts of
171 Polynesia. Its widespread occurrence argues against an independent develop-
34 ment in Tonga. Nowhere outside Tonga, however, has such a structure been
associated with the name "langi." The local peculiarities of the stonework and structural shape show sufficient independence from other Pacific types to deserve careful consideration in this connection. After all, stone platforms and pyramids are not peculiar to the Pacific but are found on all the northern continents, and it does not necessarily follow that all stone pyramids are culturally connected. Stonework associated with a pyramidal shape does not offer so extraordinary a combination as to warrant diagnostic conclusions.

A strictly structural survey of the langis themselves, disregarding all
172 native traditional accounts, might lead to the temptation to arrange langis in
764 time sequence according to the degree of development in structural features
exhibited. By such a scheme the Type A langi would be rated the oldest, Types B, C, and D logically following in the order named. The pyramidal Type E structures would end the development and so appear last upon the scene, culminating in Telea's exceptionally splendid tomb.

172 However, incomplete and doubtful as the traditional and historical records
may be, there are sufficient facts to absolutely refute a theory of time
173 sequence. The genealogies, jealously kept and protected by the pride of blood
764 which must always be associated with high social or political rank, are prob-
ably fairly accurate as far back as Telea, otherwise known as Uluakimata I. A time sequence based upon structural development is basicly wrong in that it fails to take into consideration the undulation of cultural progress, the ebb tides as well as the flood tides, the alternating of periods of retrogression with periods of climbing achievement that has marked the history of all culture.

It seems reasonably sure that native tradition has fairly accurately placed two of the langis in relative time relation to each other. These are Heketa, built by Tuitatui, and Paepaeotelea, Uluakimata's great masterpiece. There seems no logical reason to doubt the origin of these structures. According to genealogical data, Heketa was built in the early eleventh century, Paepaeotelea in the middle of the sixteenth century. This gives a certain time check with which to guide conclusions.

CONCLUSIONS

172 The great stone monuments of Tonga, of which some of the langis and the
trilithon at Hahake are the best examples, are works of the present race

of inhabitants and probably do not antedate the reign of Tuitatui, who ruled, 172 according to genealogical data, in about the eleventh century. The art of stone construction reached its maximum development in about the sixteenth century during the reign of Uluakimata I. From that time on there was a period of decadency, as far as stone construction work is concerned, paralleling and probably largely due to the weakening of the Tui Tonga dynasty, which suffered serious defeats in the civil wars of the eighteenth century and lost the throne in the early nineteenth century.

This in part coincides with a written Tongan statement, purporting to be 172 based on old native traditions, to the effect that the earliest langis were Type 173 A structures, innocent of dressed stone elements; that stone came into use later; that this stone craft reached its height of development during the reign of Uluakimata I and from that time on passed through a period of degeneracy until the last langis built were externally reduced to the original type, earthen mounds. The exact time sequence of langis which the statement would seem to pretend to give is, however, of doubtful accuracy.

The origin of stonework in Tonga, whether an invention and development 172 inclusive within the native culture or intrustive from some unknown outside source, must remain in doubt because of the incomplete data available. It is highly probable that the early Tongan colonists brought with them some memory of stonework known to their culture ancestors or ancestral neighbors, as a knowledge of similar masonry was so widespread in Polynesia. This in no way weakens the possibility that there was a peculiar local development of the art of stone craft in Tonga which was largely independent of foreign influences. If the traditional statement be accepted that Tuitatui built the first stone terraced langi, the abrupt impetus which the art received during his reign must be accounted for. Outside influence due to the arrival of a new culture element, as traditionally indicated, could account for this, but the individual genius and will to achieve of such a dominating character as Tuitatui seems to have been motivated by the desire to perpetuate his name and fame in everlasting monuments, might also explain such an enigma.

MISCELLANEOUS STRUCTURAL WORKS

THE MAKAVE FILL

173 The use in construction work of rough or dressed stones did not exhaust the native capacity for large undertakings. There are many traditions of large projects, some of them patently impossible, some improbable, others with supporting evidence which cannot be gainsaid.

133 The land just south of Makave, about 3 miles southwest of Neiafu, Vavau, is a long narrow peninsula extending south from the main body of the island. The landward end of the neck of this peninsula is about 100 yards in width. To the seaward side this width increases but is decidedly lower in elevation.

173 349 Tradition says that this low portion of the isthmus was at one time missing; what is now a peninsula, then existing as an island, called Utuatea, a name now applied to the peninsula. Whenever the district chieftain, Tuihafitu, held a big celebration of any kind, both Makave and Utuatea were constrained to supply large quantities of food. The inhabitants thought this to be too great a drain upon their resources. Accordingly they decided to make one place of Makave and Utuatea in order that but a single quota might be levied against them. This they are said to have accomplished by filling in the channel between the smaller and larger islands. They finished this task in a single night and planted trees over the filled-in area on the following morning.

Kalaota gives a quite different version of this story. According to his account, the island of Utuatea was owned by a man of common birth who held the title of Toutai, a commander of a sailing vessel for the king. The land had been given to him as a reward for services. This man's name was Fea. Tuihafitu, chieftain of Makave, wished to possess this island. Accordingly he assembled his people and set them the task of filling in the separating channel. They completed the task in a single night and planted trees over the new land on the following morning. Fea, since he was only a commoner, was afraid to complain of this treatment; so he left the one-time island in the hands of Tuihafitu and returned to Tongatabu.

173 172 The area said to be artificially made is nearly 200 yards in width and 6 feet in average height above the shoreline. It was impossible to determine whether it was natural or filled-in land.

KILIKILITEFUA WALL

349 172 Just south of Makave, at the narrowest part of the isthmus, is a large remnant of what seems to have been a straight stone wall crossing the isthmus from east to west and cutting off the peninsula from the mainland at a point where it is necessary in approaching from the mainland to ascend a marked

grade. The wall is 250 feet long, the existing base about 6 feet wide, and 349
the maximum height 5 feet. It extends only across the flat top land, stopping 172
at the top of the two steep banks that descend at either end to the sea. It is composed of rough, undressed pieces of coral stone piled together rather carefully and varying in size from small pieces weighing 4 or 5 pounds to pieces weighing several hundred pounds.

All informants agree that only a few years have elapsed since the wall
was nearly complete. It was partly destroyed, beginning in 1910, by the [312]
present government to furnish stones for the concrete water reservoirs that were being so extensively installed in Tonga at that time. The original height of the wall is said to have been "1 fathom," which was defined as a sufficient height to prevent a tall man from seeing over. The highest portion of the wall remaining has one vertical surface which does not appear to have been disturbed. It stands at an angle of about 10° from the perpendicular. The stonework is neatly and compactly finished.

The origin of this wall is generally ascribed to a custom whereby the 349
parents of every first-born son in the Makave district carried one stone and 172
added it to the existing pile. No clear purpose for such a practice could be 173
found. It was simply in accordance with an order issued by one of the Tuihafitu chieftains of Makave. One old man discredited this explanation and said that the wall was built by a chieftain named Lolomanaia. He could supply no purpose for such a structure.

FELETOA DEPRESSION

172

At Feletoa, Vavau, there is a peculiar symmetrical depression in the earth's surface more than 200 feet in diameter and from 6 to 7 feet in depth at center. Although circular and bowl-like in shape, this depression has the appearance of a natural surface feature, although any natural cause for its
existence remains obscure. It is said to have resulted from the following 172
practice. The father of every first-born son in Feletoa went to this spot
and struck the earth once with the butt of a large stick of toa (*Casuarina*). 173
The depression and the stick used in producing it shared the name *tukitou*. The accumulative result of these earth poundings is said to be the large depression.

The stories, regarding the Makave fill, the wall Kilikilitefua, and the 172
Feletoa depression, share a decidedly impossible flavor. The absence of any 173
haphazard element in the stone wall seems to contradict the possibility of so
casual and gradual a method of construction as that set forth in the narrative. 349
The accurate lines and careful piling of stones suggests not only skilled workmen but a more definite purpose than the story allows. The excellent barrier that the wall afforded between Utuatea and Makave, augmented by its slightly elevated position above any approach from the mainland, suggests

172 something closely resembling a defence, or at least a boundary to a restricted
173 area. No known defenses of this type occur in Tonga, however. The Feletoa depression is by far too large to have its origin as traditionally related.
[349] These stories seem to illustrate rationalized explanations of peculiarities of unknown origin. The story of the Makave fill, allowing for exaggeration, seems the most possible of the lot. There are other Tongan stories of the reclaiming of land from the sea (p. 100).

PETROGLYPHS

172 Some petroglyphs on the island of Telekivavau, Haapai, first came to the
531 attention of students through the efforts of Mr. Clement L. Wragge and Mr. Arthur Rounds. The group includes seven elipses, more or less circular, three of them with from one to two outer appendages and one of them with a series of more or less equidistant lines radiating outward from the rim. The remaining figures consist of an anthropomorphic representation with triangular body, closely associated with a small cross, and a line complex including as an important element a cross with arms each terminating in three prongs. The figures appear to be carelessly associated without suggestive organization.

Mr. Rounds reports the occurrence of a larger group of even simpler figures on the southwest end of the island of Tonumea, Haapai, situated on the shore line just above high water mark. I made diligent search for these but failed to find them. They probably had been covered with sand since Mr. Rounds' visit.

These are the only petroglyphs which had come to the attention of Tongan students previous to my visit. Petroglyphs of a type entirely different from
172 those on Telekivavau were found on the stone retaining walls of several of
531 the langis in Mua, Tongatabu.

764 Most of these, including the largest and most elaborate, are on the langi Katoa (p. 40) where designs appear on all four sides of this structure, but more on the south and east sides. All five terraces contain figured stones, their positions relative to each other suggesting no logical order.

The most simple motifs at Katoa consist of straight, parallel, perpendicular lines, placed at close intervals, entirely covering the vertical surface of a stone. Most of the incised stones are so corrugated. Tier two on the south side of the langi, however, contains four adjoining stones that are covered with simple but effective geometrical designs composed of perpendicular lines, diagonal lines, and chevrons, arranged in alternating groups or in more complex series. The pecked technique involves a very smooth execution. Whatever the original purpose of the figures may have been, the effect produced is pleasingly decorative. The designs are much like those on modern tapas (Pl. III, *C*; fig. 41, *a*). 172 531 764

Two pecked figures occur on the walls of the langi Tauhala (p. 55), both situated, though not immediately together, on the second stone from the southwest corner on the westernmost side. One figure consists of nine dots arranged in three lines of four, three, and two each. The other is made up of five, parallel, diagonal lines of equal length attached at corresponding ends to a vertical line (fig. 41, *b*). These figures have less of the appearance of purely decorative designs than those on the walls of Katoa.

Petroglyphs were also found on Nukulau (p. 48). One (fig. 41, *c*, 1) consists of a complex of oddly disposed straight lines and a single small circle. The technique of workmanship is the same as that of the other langi petroglyphs. Some of the lines are so faint as to be hardly recognizable. Although lacking design organization, it is quite conceivable that its original intent was decorative. Another petroglyph (fig. 41, *c*, 2) is a series of eleven nearly parallel lines of equal length slightly radiating upwards from an even horizontal base. This figure marks the left-hand corner of the outer vertical face

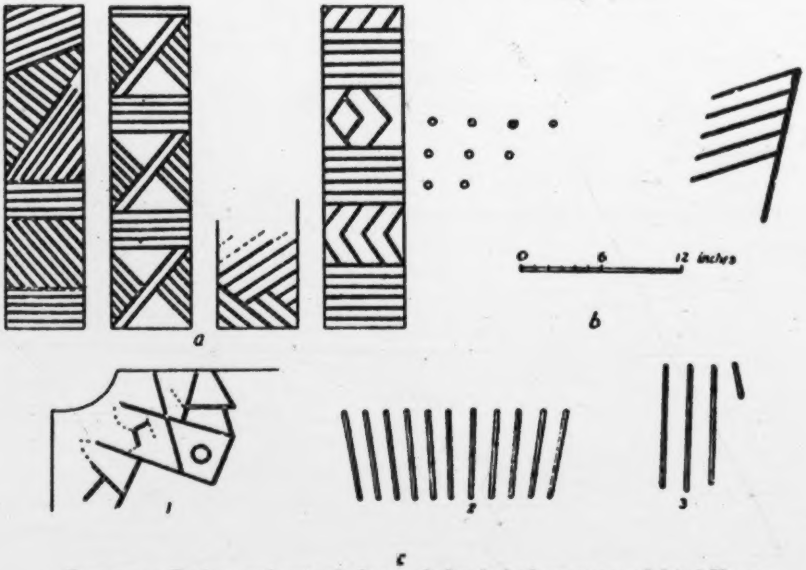

FIGURE 41.—Designs and petroglyphs: *a*, design incised on stones of langi Katoa; *b*, petroglyphs on langi Tauhala; *c*, petroglyphs on langi Nukulau—1, on northeast corner stone; 2, on easternmost wall; 3, on northernmost wall.

172 of the stone. A third petroglyph (fig. 41, *c*, 3) consists of three closely parallel, perpendicular lines of equal length with a fourth, shorter, diagonal line
531 closely adjoining the right side of the group. On the stones of this langi are
764 many other petroglyphs too poorly preserved to permit determining the detail of design. These all occur on the north and east sides.

It seems probably that most of the langi designs served a decorative purpose, although their production may have involved other ideas. The langis
[769] were the sacred resting places of the divinely descended kings, and were protected by divinely enforced tapus. The Christian natives of today avoid them. It is therefore reasonably certain that no impromptu inclination or careless and frivolous motive on the part of amateurs is responsible for the production of these drawings. Rather, they must have been authorized details of the langis. It is an interesting possibility that these designs are the
172 initial products of a tendency towards the type of stone wall decoration
531 so highly developed in some of the marae of the Marquesas (14, p. 133).

171 The Telekivavau petroglyphs are too simple and too few in number to constitute a basis for profitable comparison with the petroglyphs of other Oceanic provinces.

FORTIFICATIONS

Forms

172 The Tongans built elaborate fortifications. If their strategical or political
712 importance warranted it, towns, even small villages, were protected. Fortifications were not always kept in good repair. When changing conditions decreased the danger of attack, forts were permitted to deteriorate and were not restored to defensive fitness until occasion made it appear necessary.

A fortification consisted of three essential elements: an earthen wall or embankment, several of them in some forts; a fence of upright posts or heavily reinforced reeds surmounting the embankment; a moat, in most forts dry, immediately surrounding the wall elements. Of less importance are lookout platforms and concealed pits serving as man-traps. Such a fort was called *kolo*, or if considered impregnable, *kokomalohi*.

The construction of a *kolo* started with the digging of the moat, the earth from which was thrown up on the inside bank of the ditch to constitute the embankment, *akolo* (a fence), as high and broad as the ditch was deep and broad. The steep, outer slope of the wall merged without a break into the equally steep inner slope of the ditch. Narrow breaks in the ditch, usually adjoining corresponding narrow gateways (*matanikolo*) in the wall, permitted ingress and egress from the area fortified. The walls and moats

of most forts took a circuitous course, and where more than one wall was 172
present, they formed closely spaced concentric circles or ovals. 712

The fence or palisade surmounting the earthen wall was about 9 feet high and was made of reinforced reed thatching or of upright posts set deep in the earth and held together by courses of vine and bark binding. The combined wall and fence was called *pakelekele* (*pa*, fence; *kelekele*, earth).

Gateways were guarded by platform superstructures, transverse bars to be adjusted in an emergency, and secondary buttresses, or guard walls, defensively covering the way of entrance. Outlook platforms were placed where most needed along the top of the palisade.

The area (*tuakolo*) immediately outside the moat was the site of man-traps: *lovosa* (large traps) and *sokie* (small traps). The *lovosa* were large pits, their bottoms studded with sharpened upright stakes (*soki*) concealed by a covering of poles, brush, and earth too frail to support a man's weight. The *sokie* were small pits suffiiciently large to receive a man's leg and containing a single upright sharpened stake, concealed from the eye of the unsuspecting attacker in a manner similar to that employed in the larger traps. A moat with a bottom equipped with such stakes was called *sokii.*

These forts, properly defended, were exceedingly difficult to take. It speaks well for the courage of the Tongan warriors that they did not hesitate to storm such defenses, often with success. Waterhouse (26, p. 316) states [171] that in Fiji similar forts were seldom taken by local war parties save through inside treachery. The Tongans, as pointed out by Thomson (22, p. 363), 726 under George I Tupou, stormed and took Fijian forts with apparently little trouble.

Erskine (8, p. 75) and Turner (25, p. 191) show that the Tongans sur- 171
passed the Samoans as town fortifiers and actually contributed largely towards 712
the perfecting of Samoan forts. It is reasonably certain that diffusion of ideas regarding such defenses passed from Tonga to Samoa. Primitive Fiji, however, was well supplied with fortified towns which were practically identical with those of Tonga (8, p. 216; 24, pp. 91-92; 28, pp. 48, 49, 58), and although there undoubtedly was a certain amount of diffusion in both directions, it seems probable that the original route of diffusion was from Fiji to Tonga. Fijian forts were commonly called *kolo* and the word appears to belong to the Fijian rather than to the Tongan tongue.

The New Zealand pa is interesting in this connection as it bears a closer resemblance to the Tongan *kolo* than does any other fortification reported from Polynesia. The presence of strong Melanesian characteristics in other phases of the Maori culture suggests that the pa, like the Tongan *kolo,* may be considered as largely a Melanesian contribution.

DESCRIPTIONS OF FORTS

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1. Nukualofa.

The description by Mariner (16, pp. 90-106) of the fort at Nioocalofa (Nukualofa) gives many details that a strictly archaeological survey could not hope to furnish. These important defenses protected a roughly circular area of 4 or 5 acres of ground. The ditch outside the wall was 12 feet wide and 12 feet deep. The earthen embankment was surmounted by a strong fence of thatched reeds 9 feet high which was supported on the inner side by upright posts, 6 to 9 inches in diameter, placed 18 inches apart and extending 1 foot above the top of the reed fence. The reeding was lashed to the posts with sennit cord. A similar fence of posts and thatched reeds surmounted a dirt wall on the outer rim of the moat. The four large entrances to the fort consisted of openings opposite lapses in the ditch and were protected by sliding, horizontal coconut logs, comprising a sort of heavy grillwork. Over each entrance, and at intervals of 15 yards along the top of the fence, were platforms about 9 feet square constructed even with the top of the fencing and supported chiefly on the inner side of the fence, but projecting forward beyond the fence line to a distance of 2 to 3 feet. They were defended in front and half way on either side by reed fencing 6 feet in height. The thatching of both the main fence and the platform fences was equipped with openings to allow those within to throw spears at the attacking enemy. The fences were profusely ornamented with white shells, probably the shells of the white cowry. Mariner describes the large *lovoso* pitfalls as 4 feet broad and 5 feet deep and both *lovoso* and *sokie* as covered with stakes, plantain leaves, and earth.

The exact outlines of the Nukualofa fort were not determined. Nukualofa has been fortified on several occasions, and although some evidence of *kolo* walls remain, cultivation of the soil and recent municipal improvements have so obliterated the evidence as to rob it of anything more than corroborative value.

2. Feletoa (Vavau, fig. 42).

So far as known, the fort at Feletoa was the largest fort in Tonga. The name of the builder of the original Feletoa was not ascertained. Mariner (16, vol. 1, p. 149) describes Feletoa as sufficiently large to accommodate a population of 8,000, the entire population of Vavau In construction this fort was much the same as that at Nukualofa, but it had a dirt wall 12 feet high outside the moat and an inner wall considerably smaller. Mariner (16, vol. 1, p. 230, 421) states that Finau leveled it to the ground but finally rebuilt it.

The moats and walls of Feletoa are still much in evidence showing the structure as a roughly circular area 580 yards in maximum diameter surrounded by earthen walls. The outer and second moats and walls are crossed by seven approaches which appear as openings in the wall, continued as fills across the adjacent ditches (fig. 42, 1-7). On either side of the entrances through the wall the earth rises at a steep slope and falls away at a similar slope on either side of the fills bridging the ditches. Most of the fills crossing the two moats are offset from each other so that it is necessary, after crossing the outer ditch, to travel along between ditches for a distance of 25 to 30 feet before coming to the crossing of the second ditch. Three additional, smaller crossings of the outer ditches, each situated near a more important entrance, seem to be independent from any opening in the wall (fig. 42, 8-10). Seven fills cross that section of the inner ditch which remains, but it is impossible to say whether or not all of them are of primitive origin (fig. 42, 11-17). The transverse segment of ditch (figs. 42, *e*; 43) is prevented from connecting the outer and second moats by two narrow walls of earth, placed one at either end. An earthen wall 3 to 4 feet high closely borders the southwestern side of this ditch, and the inner side of the outer wall is margined with a similar

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embankment for a short distance on either side of the cross ditch. The only apparent purpose for such a ditch seems to be to offer further obstruction and so add to the confusion of an enemy who had succeeded in crossing the outer moat.

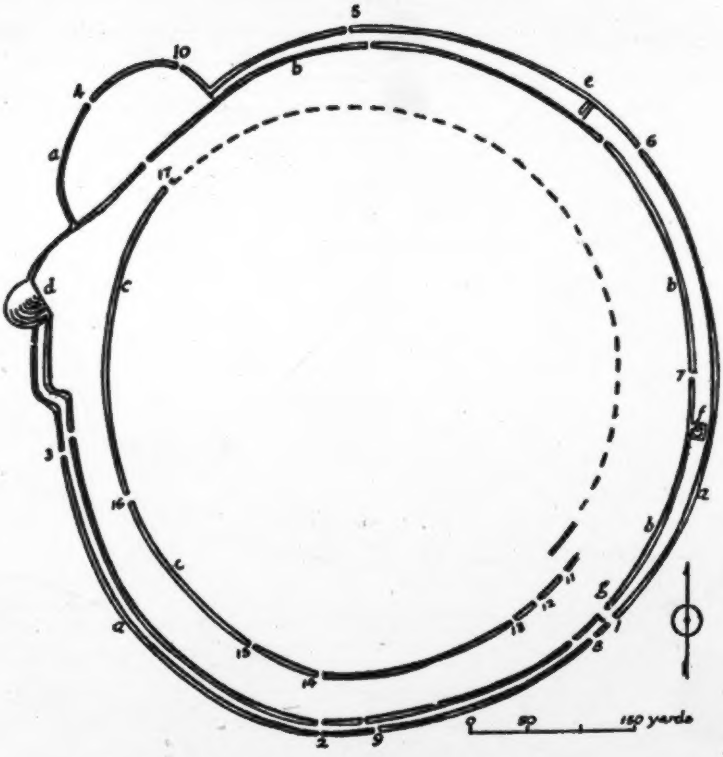

Figure 42.—Plan of fortifications at Feletoa drawn to scale: *a*, outer moat, 10 feet deep, 23 feet wide with accompanying wall; *b*, second moat 13 feet deep, 30 feet wide with accompanying wall 4 to 7 feet high, 15 feet wide at base; *c*, inner shallow ditch and accompanying wall, in part obliterated or never present: *d*, natural pit holding water; *e*, transverse segment of ditch 55 feet long, 27 feet wide, about 10 feet deep; *f*, site of langi; *g*, site of *esi* Taungata Haamea. Gateways: 1, Fatungakoa (crowded together like foam, referring to the number of fighters) 8 feet wide; 2, 10 to 12 feet wide, extended through inner wall; 3, 8 feet wide; 4, old gateway widened for modern road; 5, 3 to 4 feet wide; 6, 7 feet wide; 7, pass across second ditch and wall; 8, 3 feet wide across moat, 5 feet through wall; 9, narrow fill; 10, narrow passage; 11, 3 feet wide; 12, 8 feet wide; 13, 6 feet wide, crossing the moat where it cuts through limestone; 14, 4 to 5 feet wide; 15, 7 feet wide; 16, 17, modern road crossing perhaps of primitive origin.

172
3. Neafu, Vavau.

712 The remains of the fort at Neafu are still to be seen in places, but are too incomplete for accurate measurements. Mariner (16, p. 188) describes the building, possibly the rebuilding, of these defenses. According to his account, the inner ditch, which was 10 feet deep and 14 feet wide, was nearly completed in a single day and fencing and a second ditch, 10 feet deep and 18 feet wide, on the second day.

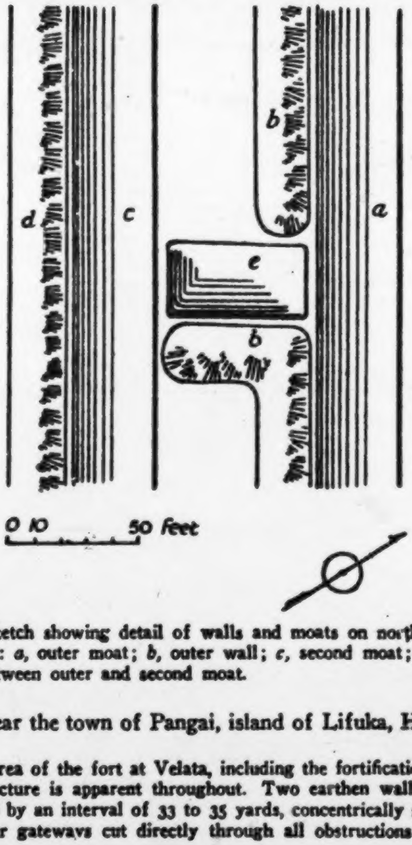

FIGURE 43.—Sketch showing detail of walls and moats on northeast side of fortifications at Feletoa: *a*, outer moat; *b*, outer wall; *c*, second moat; *d*, second wall; *e*, transverse moat between outer and second moat.

4. Velata, near the town of Pangai, island of Lifuka, Haapai, (fig. 44).

Although the area of the fort at Velata, including the fortification, is largely under cultivation, the structure is apparent throughout. Two earthen walls with accompanying moats separated by an interval of 33 to 35 yards, concentrically surround a roughly circular area. Four gateways cut directly through all obstructions to the interior of the enclosure.

[764] A large *faitoka* (grave mound) placed directly across the outer wall near the southern gateway has the form of a truncated cone (fig. 44, *f*). It is definitely identified as a grave mound by the *kilikili* pebbles and fine, light colored sand which mark its [312] upper surface. An artificial well near this mound has the typical conical shape. A low oval bank of sand crossing the outer wall of the fortification near the western gateway is said to be the remains of a *faitoka*, but no evidence was found to support the state-

ment (fig. 44, *g*). Velata is said to have been first constructed to resist the armies of Taufaahau, who later became George I Tupou. It was not used, however, at that time.

5. Uiha, island of Uiha, Haapai. This town was at one time fortified by a single wall and moat.

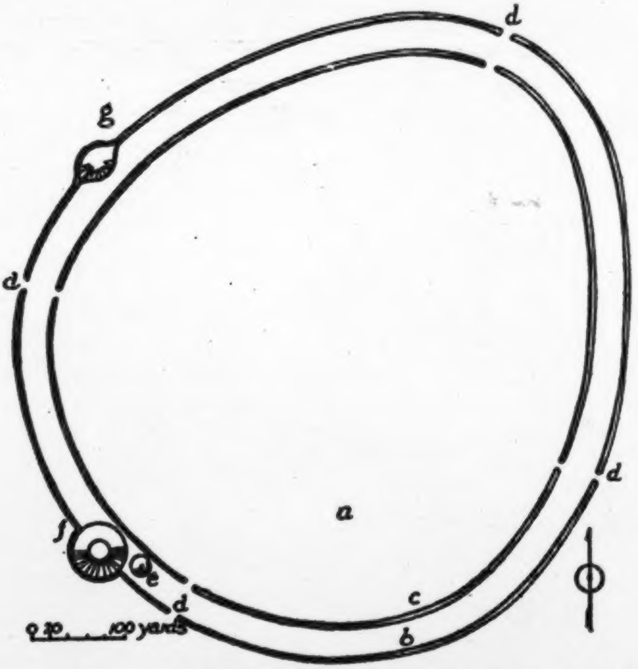

FIGURE 44.—Plan of Kolo Velata, Lefuka Island: *a*, enclosed area 553 yards by 540 yards; *b*, *c*, earthen walls 18 feet thick at base, 6 to 7 feet high with accompanying moats 6 feet maximum depth, 10 feet average width; *d*, gateways; *e*, artificial well; *f*, *faitoka*, height 12 feet, base diameter 165 feet, top diameter 60 feet; *g*. *faitoka* (?):

6. Tungua, island of Tungua, Haapai. This town was formerly protected by a wall and moat.

7. Kolotao (*tao*, war), or Toamotu, reported be situated on the volcanic island of Late, Haapai.

Kolotao is one of the most interesting forts of Tonga, although diminutive in comparative size. I did not visit it. According to reports, the fortifications at Late consist of a small circular area less than 100 yards in diameter enclosed by a fence of rough, loosely piled stones, 3 to 5 feet high and about 6 feet wide at the top. The wall is

[127]

172 immediately surrounded by a ditch and the stone wall is continued as a retaining element
extending along the inner side of the ditch to its bottom. The ditch bottom is 15 feet
712 below the top of the wall and 10 feet below the surface of the adjoining land.

The enclosure is made accessible through a gateway on one side made by squared slabs of stone standing upright, each stone about as high as a man and of sufficient width to conceal a man standing behind. A fill crossing the ditch faces this opening. Through this fill is cut an angular ditch, like a section of a modern military trench, and there are upright slabs of stone, similar to those guarding the gateway, standing at regular intervals on either side of this sunken path which leads from the gateway to the adjoining outer land surface.

Tradition affirms that this structure was used as a fort, as its name implies, but
the structural technique, if as described, is unique among the fortifications of Tonga,
[173] and so far as I have been able to determine, of Samoa and Fiji as well. According
to one account, the fort was built by a Hunga chieftain named Fukofuka who fled to
Late to escape from a Vavau chieftain, presumably Ulukalala.

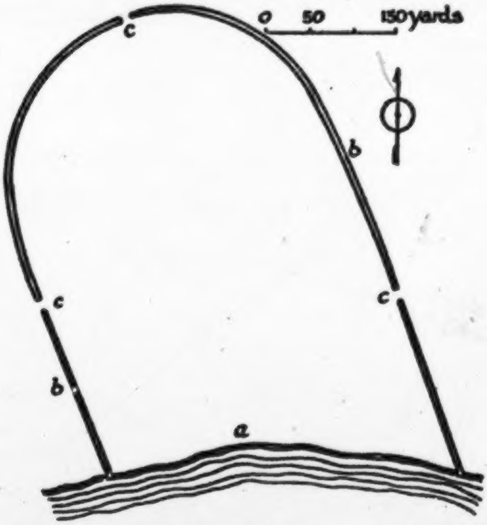

FIGURE 45.—Plan of fortification at Pea, enclosed area 580 yards long, 385 yards wide: *a*, shore of lagoon; *b*, wall 4 to 7 feet high and moat 20 feet wide, 5 to 7 feet deep; *c*, gateways.

8. Pea, Tongatabu (fig. 45).

From an historical standpoint, the fortress at Pea is perhaps the most interesting of the many defenses on the island of Tongatabu because of its recent history (22, pp. 357-360). Erskine (8, p. 148) says that a ditch 12 feet wide surrounded the town of Pea on three sides, the fourth side being naturally defended by the shores of the lagoon. Although the ditch entered the lagoon at either end, it was nearly dry for the greater part of its length. The inner side of the ditch was guarded by a dirt wall 12 feet thick and 15 feet high, strengthened internally by a wall of upright coconut

trunks and surmounted by a high reed fence. The eastern gate was defended by "a kind 172
of portcullis, and flank defenses of rough logs . . .". Chevron (18, p. 44, footnote) 712
speaks of stone walls and corbel arch gateways, but investigation proved this to be [114]
South Sea fiction.

A survey of the existing ruins revealed a ditch and inner earthen wall surrounding an area oval in shape, save for the end formed by the shore of the lagoon (fig. 45, *a*). The moat, now largely effaced, is about 20 feet wide and 5 to 7 feet deep. The earthen wall is of similar width and 4 to 7 feet high. Three gateways cross the moat and pass through the adjoining walls.

The strength of this fortress, as historically related, was somewhat due to the fact that there were only three sides to defend. No boats could approach by way of the shallow, mud-bottomed lagoon.

It is through a study of traditions regarding the fortress of Pea that some 172
sort of a time sequence is established for the other forts of Tongatabu. The 173
first series of events that can be more or less definitely placed in a chronological order was an alliance between the two chieftains Vahai and Ahomee, 712
both of the Hihifo district of Tongatabu, against the people of the district of Hahake. These two great warriors built a fortification at Poha, which I failed to locate. Tui Pelehake, the chieftain of Haatalafale and a great leader of the Hahake people in the early part of the nineteenth century, then set about to build a fortification entirely across Tongatabu, in a northeast-southwest direction, cutting off Hahake from the Hihifo district. This ambitious undertaking, now called Pelehake's ditch, was to all practical purposes completed before Vahai discovered the activities of his enemies and put a stop to the work by force of arms.

The ditch and earthen wall remain in part. Starting from the beach Mahafa, near Vatuu, this fortification passes between Houma and Vatuu, passes Hule, meanders through Nukunuku, meets and merges into the outer ditch of the Kolovai fortification at Teekiu, reappears between Teekiu and Masilamea and ends at Fahefa on the Hihifo coast. The ditch is on the Hihifo side throughout. In places the wall is 7 feet in height and the ditch has a maximum depth of 6.7 feet.

After Pelehake's defeat, two of his allies, Takai and Fae re-fortified the town of Pea. Soon after this, Vahai died. His death marked a scattering of those chieftains who had allied themselves to his cause.

9-10. Utulau and Houma, Tongatabu. 172

The fortress at Utulau was built by Valu and the defenses about Houma were built 712
by Vaea. Both of these fortifications, which remain largely intact, are similar in all respects to the other fortifications on Tongatabu.

11-12. Koloteekiu and Kolovai, town of Kolovai, Tongatabu.

These fortresses were built by Ohuafi, a son of Motuapuaka, in the first quarter of the nineteenth century. Koloteekiu had probably been previously fortified, but the walls and moats needed repairing and refencing. A survey of the remains of this fortress showed two walls with accompanying moats, separated by an interval of approximately 75 feet. The oval area enclosed within the inner wall is 275 yards in north-south diameter and 310 yards in east-west diameter. The bases of the earthen walls, approximately equal in size, average 25 feet in breadth. The maximum height of the walls is 6.5 feet. The moats average 20 feet in breadth and are from 4 to 5 feet in depth. Two of the four gateways giving access to the fortified area are so situated that a line connecting them would practically bisect the enclosure and a line connecting the other two gateways would bisect the two halves.

It is said that Koloteekiu was found too small to accommodate all the people who sought shelter in it and that the neighboring fortress of Kolovai was built to harbor the overflow. The ruins of this fortress show a structure similar to Koloteekiu. A roughly oval area included within a double set of walls and moats measures 216 yards from east to west and 233 yards from north to south. The walls, approximately equal in size, average 25 feet in base diameter and are 6 to 7 feet in height. The moats average 20 feet in width and retain a maximum depth of 5 feet. Of the four gateways, each 6 feet wide, two are directly opposite each other, the other two occupy intermediate points.

13. Kolonukunuku, Tongatabu.

This fortification was built shortly before George I Tupou, the first of the Tui Kanokupolu dynasty of kings, came to the throne in 1845. It consists of a single wall and outer moat surrounding a roughly circular area 164 yards in north-south diameter. The walls and ditch are now nearly obliterated, the present wall measuring only 3 feet in height, and the ditch 4 feet in depth. Many recent breaks in the walls render it impossible to accurately determine the number or situation of the original gateways.

14. Kolohule situated just outside the village of Fatai, Tongatabu.

Kolohule was rebuilt according to some informants in the days of George I Tupou. It consists of a single wall and moat surrounding a roughly circular area 400 yards in diameter. The embankment and moat are, apparently, in comparatively good condition. The wall is nowhere much under its maximum height, 7 feet, and averages 15 feet in breadth at the base. The moat averages 20 feet in width and has a maximum depth of 12 feet. The enclosed area is entered by four gateways of the usual type: the northeast gate was called Homofahefa; the northwest, Manahau; the southeast, Hamoko; the southwest, Hunganga. Besides these gates used for general entrance and exit, there was a small gateway known to only a few and used only on occasions when secret movements were deemed necessary. Its position could not be determined. Such gateways (*matapafakolau*) are said to have been present in all fortresses.

15. Fortifications at Longoteme, Tongatabu.

A slightly oval area 317 yards in north-south diameter is surrounded by two concentric walls 35 to 40 yards apart, each with an outer moat. The ditches and ramparts are of average size.

16-18. Maofanga, Polonga, and Kolomatua, Tongatabu.

The fortifications about these towns are in so poor a state of preservation that an accurate study of their detail is rendered exceedingly difficult.

19. The fortress of Lapaha, now known as Mua (p. 92).

172
712
128

This list does not pretend to be exhaustive. It is intended, rather, to illustrate the general structure of Tongan fortifications and the detailed features of some of the finest examples.

ROADS

172
491

Not least among the structural peculiarities of Tonga are the sunken roads. Their dimensions renders it highly improbable that they are the result of the wear of repeated travel. Their features suggest, rather, deliberate artificial excavation, although no good reason for building a ditch to serve as a road suggests itself. At first I thought they were courses for the game of *sika,* in which specially constructed spears were bounded along over specially prepared ways. But the great length of one of the roads, and the steep ascent of the other, renders such a use improbable. The Tongans insist that they are roads and I am not prepared to contest their views. Two of these peculiar highways were examined

Halamate (*hala,* road; *mate,* dead), probably a recent appellative, extends lengthwise from end to end of the island of Ualeva, Haapai, a distance of several miles. It has the appearance of a square-bottomed ditch with the removed earth banked on either side. Its dimensions are 2 to 3 feet in depth, 6 feet in width at the bottom and 12 feet across the top from bank to bank. The course, as marked by a heavy growth of shrubbery along the bottom and sides of the road, follows a consistently straight direction.

The other road ascends the western slope of the hill Kafoa (p. 12) on the island of Vavau. It rises straight from the Pangaliki shore to the ridge top just below the hill. The floor of this square-bottomed excavation is about 3 feet wide and is 6 feet below the tops of the lateral embankments. The embankments stand at an angle of about 45°.

USE OF CAVES

172 There is evidence of a twofold use of caves in Tonga. Use for tempor-
342 ary shelter and places of hiding was to be expected and warrants no lengthy
discussion. The use of caves as burial places, however, deserves more care-
172 ful consideration as it is contrary to recent customs and traditions, and not
764 altogether in harmony with the usual primitive methods of burial. It is in-
teresting to note in this connection that the Fijians somtimes buried their
[171] dead in caves (28, vol. 1, p. 186). Moreover, no accounts of cave burials
in Samoa were found—negative evidence hardly appropriate to use as an
argument for Fijian origin of cave burial. Tongans usually account for
[173] the occurrence of skeletal material in caves by stories of wartime refugees
who lived and died there, or who were tracked to their hiding places and
killed there. The remains are usually laid out with great care, however, and
172 in no way suggest a scene of final retribution. Referring to a cave burial
764 which he saw at Toula, Vavau, West (27, p. 186) says: "The native guide
informed me, that strangers to the land were never buried in the ordinary
766 places of interment. They were considered as outcasts, and their bodies
were, therefore, brought to this cave to be buried in the sand." On the other
hand, the skeletal material which I obtained from a cave burial on the island
of Kau, Haapai, was found by Sullivan (21) to be similar in type to material
from regular burial places. This suggests that these people were not foreigners in any radical racial sense. The available evidence seems to indicate that some strangers and foreigners may have been buried in caves, in districts where caves were available, and that other caves were used as burial sites by refugees for their dead.

172 The caves Anapusi (Cat-cave), Poutaha (Single-post) and Anakumete-
342 kava (Stone-kava-bowl-cave), situated near the western top of a low hill
south of Maofanga, Tongatabu, were traditionally used as dwelling places
[825] or temporary shelters. Cat-cave is so named on account of some owls that
are said to live there and to have the supernormal power of assuming the form
of cats at will. Single-post-cave derives its name from a limestone column
which supports the entrance roof. A concave stone, said to have been found
in Stone-kava-bowl-cave, accounts for its name. All of these caves are un-
172 comfortably small as places of residence. Nevertheless, refugees from the
342 fighting forces of George I Tupou are said to have hidden there. They bear
no evidence of prolonged occupation.
726

A cave called Analahi (Large-cave) penetrates the precipitous face of the northeastern shore of Eua, Tongatabu. It is said that a group of Euan refugees lived here for a considerable length of time, the only means of access to the cave being so difficult that a single man could guard it against

an army. These refugees were finally starved out and were all killed in 172
attempting to leave the place. Examination found the cave to be a series 342
of four connected caves, owing their origin to erosion in limestone. They 726
were large, roomy, well protected from the elements, and accessible only
by a single, difficult trail. The irregular stone floor was covered in places 172
by a thin stratum, 0.2 feet thick, of mingled sand, ash, and charcoal. Some 342
seashells and a few bones of small birds and fish were present in this material.

The following Tongan caves contain burials:

1. Anaotua (Gods-cave), penetrating the low cliff facing the sea just 172 764
below the town of Toula, Vavau.

Over the floor of this large cave is a stratum of fine white sand, of a kind not found in any natural formation on this part of the coast. This artificial stratum is of barely sufficient thickness to cover the human remains found buried there. Recently large quantities of this sand have been removed for use in making grave mounds in the modern cemetery at Toula. No native information regarding the cave burials could be obtained.

2. Makatapunimatapa (*maka,* stone; *tapuni,* to shut, to put a lid upon; *matapa,* doorway, entrance), on the volcanic island of Late, on the outskirts of the Haapai group.

This cave was not visited. According to reports, it is a large sepulchral cave artificially floored with white sand, upon which the dead have been laid out in rows. The mouth of the cave is said to be sealed by means of a large, rectangular, vertically placed slab of stone, occupying a central position in the opening, and several smaller slabs placed at either side. Some of these smaller slabs have been displaced, allowing entrance to the tomb.

This account seems plausible to me as I examined a similar sepulcher on the neigh- 172
boring island of Kau—also of volcanic origin. Here a large surface lava bubble had
been broken into from the side to an extent sufficient to admit a man, by means of 764
crawling, into the hollow interior. This chamber was 11 feet long, 8 feet wide and 3.5 133
feet high. A steep slope of broken rock and debris led down from the opening to the
cave floor, which was smoothly covered with a light colored sand. A transverse wall 172
of small, rectangular stones separated the mixed material, descending from the entrance,
from the sand floor. Eight groups of skeletal material, probably representing eight 764
burials, lay on the sandy floor of the cave. The entrance had been externally sealed
by means of a large flat stone which had been removed previous to my visit. The
buried material showed signs of having been disturbed, but most of the bones were in
a fairly good state of preservation. The only artifacts found associated with the
skeletal material were five tubular beads fashioned from the wing bones of some
fairly large bird.

3. Small cave in the side of the hill called Mounga, near the town of Nomuka, island of Nomuka, Haapai.

The human bones found in this cave had been so disturbed by recent vandalism that the meaning implied by their occurrence was entirely lost.

4-5. Anapekapeka, at Maifi, and Anafakaata, at Haasini, Tongatabu.

These two caves are floored with a fine white sand said to be foreign to the immediate vicinity. Human bones, resting on this sand, appear to be the remains of burials.

172 764 6. Fangavahe, a cave under the hill Hufangalupe, near Vaini, island of Tongatabu, is reported to contain human bones.

7. Large cave in the shore cliff just west of Hoouma, island of Eua.

172 764 173 According to one story, the human bones found in the cave near Hoouma are the remains of a party of war refugees who had been discovered in their hiding place. Their enemies built a fire before the cave mouth and those within all died from suffocation. This story is told of various caves scattered all over the Tongan group. It seems to be a favorite means of accounting for the presence of bones in caves. A more reliable informant stated that the cave was a burial place and that the bodies had originally been placed in rows. The presence of an apparently artificial stratum of white sand on the cave floor, under the bones, suggests burial.

LAPAHA, THE KING'S VILLAGE

172 361 The village of Mua, situated on the shore of a lagoon, about 5½ miles southeast of Nukualofa, was for many generations the seat of Tongan government. As such, it was the center of Tongan life and culture, and remains the richest spot in archaeological monuments in the entire archipelago.

172 124 Information regarding the ancient plan of the town was obtained from old men and women who have long resided there, some of them the direct descendants of individuals whose official business it was to keep track of just such information. The ranking direct descendant of the last Tui Tonga was 172 [127] [126] one of the chief informants. Another source of information is the considerable mass of mythological material assembled by Gifford (13). Personal observations produced the measurements and descriptions of the existing remains of ancient structures.

172 175 361 [643] Mua is divided into two districts (fig. 46). The northern half including the area known as Maolunga is the ancient Lapaha, the southern half is the comparatively recent addition called Tatakamotonga. Lapaha was divided between the Tui Tonga, the ruling dynasty for many generations, and the Tui Haatakalaua, a chiefly family closely related to the Tui Tonga, who dominated the political life of Tonga for a period preceding the rise of the Tui Kanokupolu, the present dynasty.

Cook (4, vol. 1, pp. 282-283) contributes the following interesting description of Lapaha:

> [342] [351] The place we went to was a village, most delightfully situated on the bank of the inlet, where all, or most of the principal persons of the island reside; each having his house in the midst of a small plantation, with lesser houses, and offices for servants. These plantations are neatly fenced round; and, for the most part, have only one entrance. This is by a door, fastened, on the inside, by a prop of wood; so that a person [363] [351] has to knock before he can get admittance. Public roads, and narrow lanes, lie between each plantation; so that no one trespasseth upon another. Great part of some of these inclosures is laid out in grass-plots, and planted with such things as seem more for ornament than use. . . . There are some large houses near the public roads, with spacious smooth grass-plots before them, and inclosed. These, I was told, belonged to the king; and, probably, they are the places where their public assemblies are held.

The southern and most ancient part of Lapaha was largely monopolized 172 361
by the Tui Tonga. The northern part, Maolunga, was the seat of govern- 643
ment of the Tui Haatakalaua. Lapaha was faced on the northwest by the
lagoon and surrounded on all other sides by a fortification consisting of a 172
ditch and an earth wall surmounted by a stockade. The ditch is now largely 361
filled in, but in places, where apparently it has not been disturbed, it is 10 feet 712
deep and 20 feet wide at the top. The earth removed in digging the ditch
forms a steeply walled bank bordering the village side of the ditch. The
stockade fence was constructed of vertically erect posts placed together
without interval and held together by means of poles placed horizontally and
lashed with strips of fau bark. There were three, straight, level entrances to
the fortified area, the names of which are not remembered. According to
one informant, the Tui Tonga Takalaua either built or rebuilt these fortifications.

Entering ancient Lapaha through the southwestern gateway, the first 172
structure encountered was the Olotele, a rectangular area enclosed by a reed 351
fence taller than a man's head and entered by a gateway, in the center of 644
which stood a post of volcanic rock, 3 feet high and 1 foot thick, called Toko- 362
matupa, said to have been a gift to one of the Tongan rulers from Vuna, a
chieftain of Houma. This area enclosed the house of the Tui Tonga, prob- 172
ably a dwelling of large size built on an earth mound. Surrounding the 644
King's house (also called Olotele) were the smaller out-buildings occupied 342
by the King's household servants. 351

All that now remains at the site of the Tui Tonga's house is a low oval
mound of earth, 50 feet in length, the house-mound of the royal dwelling.
The stone Tokomatupa, now generally known by the name of Levulevukefu,
has been recently moved from its former position and now stands under a
nearby tree. One house post from the old royal residence has been built 172
into the house of Joeli Pangia, the living, ranking representative of the Tui 342
Tonga family. It is a smoothly surfaced house post of *ngatae* wood (*Erythrina corallodendron*).

Opposite the entrance to Olotele and about 35 yards distant, stood the 172
house of Kautai, the priest who ministered to the king's family god, Taufai- 346
tahi. This house is said to have had a name, which is now forgotten. The 644
large oval mound, 40 feet in length, that now marks its site is called Paepaeo- [368]
kautai (*paepae*, house-mound; *o*, of; Kautai).

North of these two houses and immediately bordering them, was the great 172
malae of the Tui Tonga—a flat, grassy, rectangular area where the king
held ceremonies and entertainments. The *malae* was about 100 yards long, 368
and surrounded by large *ovava* trees. A very large tree of this species, under 644
which the Tui Tonga sat during any function, was named Manaui. [37]

This area no longer exists as such. The main road through Mua passes 172 361 [363]

102 Plan of Lapaha. (See figure 46.)

361 **Lapaha proper:**

712 *a*, fortification wall.

368 *b*, fortification moat.

172 *c*, gateway.

d, Olotele, enclosure and house of the Tui Tonga.

e, Tokomatupa, stone post.

f, house of Kautai.

g, malae of the Tui Tonga.

h, mound Takuilau.

i, malae Fanakava.

j, langis, royal tombs: 1, Tuoteau; 2, Tauatonga; 3, Katoa; 4, Tuofefafa; 5, Sinai; 6, Taetaea; 7, unnamed langi; 8, Tafaua; 9, Leka; 10, Tauhala; 11, Nukulau, a; 12, Nukulau, b; 13, unnamed langi; 14, unnamed langi; 15, Faapite; 16, Maluatonga; 17, Puipui; 18, Nakulukilangi; 19, Langalangafehi; 20, Paepaeotelea; 21, Namoala; 22, unnamed *faitoka*.

Moalunga:

k, Fonuamotu, dwelling of the Tui Haatakalaua.

l, Nukukausiala.

m, Falesinifu of the Tui Haatakalaua.

n, cohabital house.

o, *faitoka* for wives of the Tui Haatakalaua.

p, Falekili.

q, well.

r, Vakaniua, anchorage island.

s, Tukumotofa, house of Lauaki.

t, Malama, bathing place.

u, house called Milo.

Loamanu, burial place of the Tui Haatakalaua: 1, Falepulemaalo; 2, Loamanu; 3, Faletuipapai; 4, cemetery of Luani; 5, stone wall; 6, house of Afu Haalaufuli, caretaker.

Tatakamotonga:

v, house of the Tui Kanokupolu.

w, Avaui, house of priest.

x, the house Matangipuomai.

y, Falehau, king's guest house.

z, the god-house Kikiloi.

7: McKern A-4,5 (1920-1921) 1929 OU9 Tonga OU9

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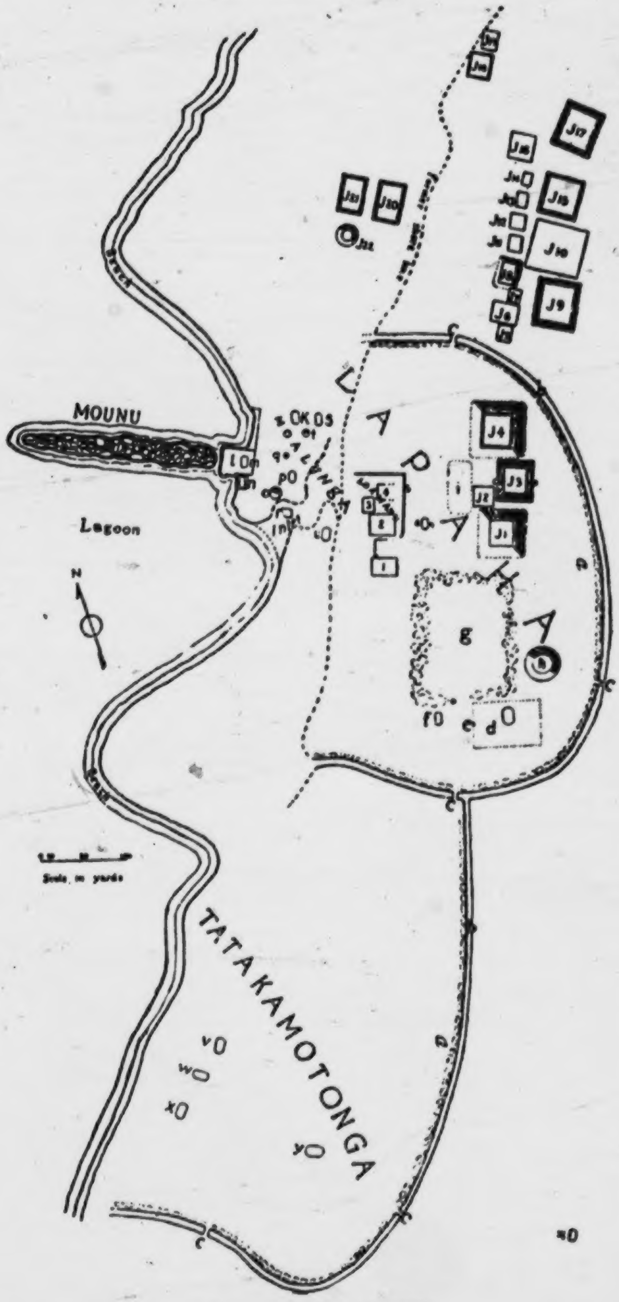
MOUNU
Lagoon
N
LAPAHA
TATAKAMOTONGA
Scale in yards
J4
J3
J2
J1
J9
J10
J16
J17
J18
J20
J21
g
h
i
d
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FIGURE 46.—Plan of Lapaha

172
361 through its center. The yard of the Catholic church occupies a part of its
[363] western half and other modern houses and fenced-in yards now cross its
[368] boundaries. A few *ovava* trees are still standing and the roots of the tree
[137] Manaui are still to be seen.

172 Southeast of the *malae* is the mound called Takuilau (*taku*, Fijian term
34 meaning land at the back of a mountain; *i*, in; Lau, a group of islands in
[368] Fiji). This is a circular mound of sand, with irregular surface nearly 50 yards in base diameter, where, some say, were buried all refuse materials
[643] intimately pertaining to the physical body of the Tui Tonga. Blood from wounds, hair, vomit or anything else that was considered to be a severed part of the kingly body was carefully preserved and buried in this sand pile. From another source comes the contradictory statement that Takuilau was the house-mound of the Tui Tonga Fefine, the oldest sister of the Tui Tonga.
[342] This mound, however, is entirely unlike any house-mound observed in Tonga. Not only is its shape different but Tongan house-mounds were not built of sand unless the foundation and the land immediately adjoining were also of sand. This mound, on the other hand, has much the appearance of a burial place.

172 Immediately north of the *malae* was a broad clearing, having much the
361 appearance of a broad road. It appears to have had no name but is said to have been 15 to 20 "fathoms" (about 100 feet) in width and to have been lined by large *ovava* trees.

172 The northern part of the fortified area is occupied by four great stone
368 langis of the Tui Tonga (pp. 39, 56, 58).

644 Just west of these tombs was an area called Fanakava. Its boundaries cannot now be determined, but it is said that one side touched the langis and that the other side merged into the great clearing. Fanakava was a rectangular and oblong area covered by a grassy turf. Some describe it as surrounded by a reed fence, others as without a fence. It was a *malae* of the Tui Tonga, where he occasionally presided over his kava circle. There was no house, priest, or guardian of this place, yet there was one peculiar, religious tradition
[696] associated therewith. Within its boundaries refugees from retribution were safe from attack (12).

172 There is every indication that the old road did not follow the course of
363 the present highway through Mua. Rather, it avoided the fortified area, passing south and east of the embankment and extending east and northeast to parallel the eastern margin of the row of langis.

172 Outside the fortification, the langis continue as two parallel rows com-
368 prising 13 structures. North of these two rows are two other langis. On
764 the flat outside of the ancient shore line are two langis, 50 feet south of which is a large *faitoka* with the lids of two stone vaults exposed to view on its

172

superior surface. All of these langis, 4 inside and 17 outside of the fortified 368
area, are considered as being in Lapaha (pp. 36-61). 764

Maolunga includes the dwelling house, outbuildings and burial place of 172
the Tui Haatakalaua family, said to have been first built and occupied by 644
Moungamotua, the first Tui Haatakalaua, and the younger brother of Tui 368
Tonga Kauulufonuafekai. 362

The dwelling house called Fonuamotu was a large thatched building of 172
the better class standing upon a low, earthen *paepae* about 50 yards from the 644
present shore line. 342

Southwest of this house stood a mound called Nukukausiala which formed 362
the *paepae* of the house called Falesinifu (House-of-concubines) where the
common wives of the chieftain dwelt. As it appears today this mound is 172
essentially a rectangular platform of earth, 110 feet long, 75 to 91 feet wide, 342
3 feet high on its land side, and 8 feet above the bottom of the lagoon. More than half of the mound stands out from the shore upon subaqueous foundations. Its sides are faced with loosely piled coral stones, many of large size. Some of the slabs are dressed and others show a rude smoothing. The eastern wall of the mound is so sloping as to permit walking up the incline. The inclination of the other three walls is about 70°.

Immediately south of Nukukausiala is a somewhat similar platform, 35 feet wide. On the lagoon side where the structure just overlaps the low-tide mark, its top is 3.5 feet above the lagoon bottom; on the land side the height is 2.3 feet. The vertical retaining walls are built partly of rough stones and partly of dressed slabs. In the seaward wall, close to the northwestern corner of the platform, is a large, flat, circular stone, 1 foot thick and 10 feet in diameter, a natural coral growth known as brain-coral or mushroom-coral. The stone stands on edge 6.5 feet above the top of the platform. It is called Filimoimaka, the name of the chieftain who brought it from near Kolonga and presented it as a gift to the Tui Haatakalaua.
Its purpose and use seem to have been purely ornamental. On this mound [644]
stood the house which served as the cohabital house of the chieftain and his
common wives. No general name for this type of house, or specific name [362]
for this particular house, could be found.

From the western end of Nukukausiala and extending out into the lagoon 172
is an irregular pile of large, rough, coralline rocks about 25 feet in width 34
and 500 to 600 feet in length, called Mounu. The formation is undoubtedly [361]
artificial. A common story accounts for this rocky isle as built up from the
discarded oven-stones of the great sailing vessel *Lomipeau*, the boat that is 172
reputed to have brought stone slabs from Wallis Island as material for one 173
of the large langis. Another account explains this pile of stones as the begin- 34
ning of a causeway that the Tui Tonga Pau started to build across the lagoon

172
173 from Mua to the Tukutonga point east of Nukualofa (p. 18). The first
34 account needs no comment; the second is highly improbable.

172 About 50 feet southeast of Nukukausiala is a circular, round topped sand
764 mound, 40 feet in base diameter and 3 feet high. It is the burial mound
[368] (*faitoka*) where the common wives of the Tui Haatakalaua were buried.
[644]

A few yards northeast of this *faitoka* is the low, oval, earthen mound
172 where the house called Falekilikili formerly stood. This house served as a
344 place where the small, black, volcanic pebbles called *kilikili*, used in decorating
[368] grave mounds, were sorted and oiled previous to use. Ordinarily this house
[764] was tapu to every one. Only after a death in the Tui Haatakalaua family
[644] were the old women from among the chieftain's retainers permitted to enter
this house and perform the duties associated with it. Close to the north side
172 of Falekilikili was a shallow, funnel-shaped well where the old women
312 washed their hands after oiling the *kilikili* stones.

The inlet from the lagoon is now nothing more than a small mangrove
172 swamp, but anciently it is said to have contained sufficient water to permit
133 large, double-hulled sailing vessels to enter and anchor. Traces of stone
172 work about the edges of this swamp suggest that the channel was at least
503 partly artificial. The stones seen are dressed coral slabs, generally showing
only their tops above ground at the swamp edge.

172 In the center of the inlet, opposite the *faitoka*, there is a small island
[133] called Vakaniua. It was at this island that the sailing vessel of the Tui
[504] Haatakalaua was moored when at the home port. The island derived its
name from the boat, the name being progressively handed down from one
[552] boat to its successor. The original boat derived its name from having carried
the chieftain Fotofili to the island of Niuafoou, north of the Vavau group.

About 50 yards east of the house Fonuamotu stood the house called Tuku-
172 motafa, the dwelling of Lauaki, ranking matapule (non-chiefly official) in the
342 suite of the Tui Haatakalaua. It is now marked by an earthen *paepae* of the
644 usual shape with its major axis about 35 feet long.
[362]

About half way between the house of the chieftain and that of his ranking
172 matapule was the chieftain's bathing place, called Malama. It is a funnel-
312 shaped, circular basin about 20 feet in diameter, said originally to have been
[368] one "fathom" deep but now not more than 2 feet deep and quite dry. It is
not known whether the bath was naturally supplied with water, which would
necessarily be brackish, or was filled with rain water from the roofs of the
houses, said to have been the source of supply of many of these bathing
places.

172 The cemetery of the Tui Haatakalaua lay inside the ancient shore line.
764 It now consists of four stone-walled burial platforms, collectively called
[368] Loamanu, a name derived from the largest of the burial structures. (See
p. 58.)

The stone wall which partly surrounds Loamanu measures 235 feet along 172
the eastern side and 181 feet along the northern. The wall, now in ruin, is 349
5 to 6 feet wide at the base and 4 to 6 feet high; originally all the wall was
probably 6 feet high. [361]
This wall is composed of rough, medium-sized pieces of coral reef limestone, piled carefully with the flattest sides outward and parallel with the slope of the wall surface, about 75°. This surface, where it remains intact, is moderately smooth and uniform. At a distance of 35 feet from the western end of the wall two upright, squared pieces of coral limestone, 1.5 feet wide, 0.8 foot thick, with heights of 5 and 6 feet, respectively, stand in the wall, separated by an open space 2.5 feet wide. These rudely dressed posts appear to mark a narrow entrance. No account could be obtained regarding this wall. It appears to be a partially complete, or partially destroyed fence enclosing the cemetery.

Just outside the western limits of Loamanu, near the shore of the lagoon 172
inlet, now represented by a *paepae* 35 feet long, 20 feet wide, and 1 foot 342
thick, stood the house called Milo. There is some doubt about the intended [362]
purpose of this place. According to one report, Milo was the residence of
one of the important matapules of the Tui Haatakalaua. The name and duties 172
of this officer were not explained although one informant rather doubtfully 342
thought that he took charge of the burial rites of deceased members of the 644
chieftain's family. Another unsubstantiated report describes the place as the priest-house of the chieftain, but several informants insisted that the Tui Haatakalaua had no god other than the family god and priest of the Tui Tonga.

East of Loamanu stood a house said to have been the dwelling place of [362]
Afu Haalaufuli, a matapule of the Tui Haatakalaua and the caretaker of the
cemetery Loamanu. A report, describing this as a god-house for one of the Tui Tonga's gods, was emphatically denied by Joeli Pangia and his oldest matapule. The house-mound is now obliterated.

Tatakamotonga, the home of the Tui Kanokupolu dynasty after its rise to [362]
political power, faces the lagoon and is surrounded on two sides by a trench [712]
and moat—an extension of the older fortifications.

The house of the king, or ranking member of the family, called, generally, 172
falehau (*fale*, house; *hau*, a king of the Tui Kanokupolu dynasty), and spe- 351
cifically Langakali, originally stood in a fenced enclosure, of undetermined 644
dimensions, which is said to have been rectangularly oblong in shape with a major axis extending northwest and southeast. This fence was called
Lulukaho. The house-mound which remains is 40 feet long, 25 feet wide, [342]
and 1 foot high.

The priest's house, called Avaui, stood about 30 yards southwest from the 172
king's house. All that remains of the structure is a house-mound about 35 346 [368]

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346 feet in length by 20 feet in maximum width. The god of that place was Taliaitupou, or Kaliaitupou.

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[362] About 50 yards southwest from this god-house once stood the structure called Matangipuomai, the *falefakautangata,* or sleeping house of the oldest son of the king, while unmarried, and of the selected group of young men comprising his princely suite. As the site is now occupied by a wooden dwelling of European type, nothing could be determined regarding the size or orientation of the original house.

The site of the *falefakaufefine,* the sleeping house of the oldest, unmarried daughter of the king and of her young maiden attendants, could not be located nor its name ascertained. It is thought to have stood north of the king's house.

The *falehau,* the guest house of the king, was the largest house in Mua, reputed to have been equipped with eight large houseposts. Nothing remains but the mound, of which the major axis, extending northwest and southeast, is 80 feet in length; the maximum width is 50 feet. Its specific name is said to have been Tatakamotonga. According to some reports, it occupied the center of a grassy area, a *malae.*

172 Outside the walls of Mua, east of the district called Tatakamotonga, there
361 was a large area called Ahau (literally, of king), which seems to have been
644 an outside addition to the lands of the reigning Tui Kanokupolu. The only
place of chiefly importance located here, however, in so far as could be
172 determined, was Kikiloi, a god-house of the Tui Tonga where the priest
346 Kautai is said to have officiated for the god Taufaitaha. Cultivation has
changed the house-mound to such an extent that it was impossible to determine its size and orientation.

172 With reference to the age of Lapaha, the feature shown on the map as
133 the former shore line is of special interest. A survey of this old shore
terrace leaves no possible doubt that it once constituted the margin of the
361 lagoon. Its chief archaeological importance lies in the fact that the ends
of the moat surrounding three sides of Lapaha, terminate abruptly at this line.
This seems to indicate that this was the true shore line at the time the
fortification was built. The people of the district say that the strip of low-
172 lands between the former and present shore lines was artificially built by one
173 of the ancient Tui Tonga. The fabulous ship *Lomipeau* is said to be buried
361 somewhere under this fill. The undertaking of reclaiming land on such a
scale, without any apparent need for it, is too large to seem probable.

Dates depending on genealogies are bound to be inaccurate, but must serve where no other convincing data are obtainable. Allowing 30 years to a generation, Lapaha became the seat of the Tui Tonga about the last of the eleventh or beginning of the twelfth century. The fortifications around

Lapaha were built, or rebuilt, towards the end of the fourteenth century. 172
Maolunga was finished and occupied between the end of the fourteenth and 173
the beginning of the fifteenth century. The capital was transferred from 361
Mua to Nukualofa early in the nineteenth century. Thus, the town anciently known as Lapaha, now called Mua, was the seat of government for about 600 years.

EXCAVATIONS

LOCATIONS

172 Available sites for archaeological excavations in Tonga are of two kinds, 114 old burial places and kitchen middens. The burial places, though plentiful enough, are so definitely remembered in the folk history of the people that, [769] to their minds, excavation would be no less objectionable than the desecration [121] of a modern cemetery. The kitchen middens are so few in number and represent such small accumulations of debris, both in area and in thickness, that only the determination to leave no possible source of information untouched made their investigation desirable. In the end, the discovery of pottery alone justified the amount of time and energy expended.

Exceptional conditions permitted the opening of five old burial places. One *faitoka* on the island of Motutapu and two langis on the island of Tongatabu were deliberately opened. One unknown *faitoka* was entered in excavating what was reported to be an old god-house *paepae*, on the island of Pangaimotu. The fifth burial place was accidentally uncovered in excavating a kitchen midden at Nukualofa.

The kitchen middens excavated are: 1 at Nukualofa; 1 on the island of Pangaimotu; 2 in caves on the island of Eua; 1 in the town of Mua; 1 on the island of Motutapu. All of these are in the Tongatabu group; no kitchen middens of any description rewarded the search in the Haapai and Vavau [128] groups. The results of excavations are included in the following brief descriptions.

PANGAIMOTU SITES

KITCHEN MIDDENS

133 The island of Pangaimotu, situated about 2¼ miles northeast of Nukualofa, has an area of less than one square mile and a maximum elevation of 311 about 15 feet. Although uninhabited, the island supports several very productive yam and fruit gardens, cared for and harvested in season by inhabitants from the main island.

On the southwest coast of the island, the sea has encroached upon the 133 land to produce a perpendicular, earthen bank above the beach line, 2 to 6 feet in height and several hundred feet in length. Inland from this exposure, the land surface dips downward, indicating that the sea has cut in to the very center of the original embankment. The foundation of the mound seems to have been a sand dune. The upper strata, to a varying depth, are com- 172 posed largely of ash, charcoal, marine shells, and burnt coral rock. Near

the southeastern extremity of the mound, the strata visible above the sand 172
beach, 1 to 4 feet thick, consist largely of kitchen midden refuse. An excava- 172
tion 10 feet long, 4 feet wide, and 4.2 feet deep, was made at what promised 121
to be the most productive part of this section of the bank. The trench extended 0.9 foot below the upper beach line and 0.7 foot below the present beach surface.

The deposit was horizontally stratified, cross-bedded, and uniform throughout. In 172
it were embedded several earth ovens, intrusively present, lined with coral rock and averaging not more than 3 feet in diameter or 1 foot in depth. The bottom of the deposit rested rather abruptly on a natural base of clean beach sand. All the material in the mound was examined both in situ and after removal, and was finally screened.

The top of the formation produced (a) modern refuse such as bits of rusty barrel-hoops, bottle glass, fragments of copper sheeting, iron, brass, and copper nails, a detachable pearl-shell button, (b) food refuse including marine shells and bones of small animals and fish, some of them showing artificially cut surfaces, and (c) refuse from the ovens, an appreciable quantity of burnt coral rock. The metal and glass objects were plentifully present down to a depth of 1.7 feet; at greater depth they were markedly rarer and mixed with marine shells showing used edges and points—markers of a more primitive culture. Detached canals from a univalve, called *angaanga* (*Pterocera sp?*), with points bearing evidence of use, and pieces of artificially cut shell were present. At a depth of 2.5 feet, more shaped and work-worn shells were encountered and the debris was entirely free from metal, glass, or any other articles indicating European contact. A fragment of a smoothly shaped and polished bone thatching needle was found 3 feet from the surface. Below a depth of 3.3 feet, no artifacts or other articles indicative of human occupation were found. A few marine shells and fish bones were present, and small quantities of charcoal, such as might be included in any
beach deposit. Most of the material examined is of very recent deposit. The metal [439]
and glass fragments might well date back to the visits of Cook (1773 and 1777) (4, vol. 1, p. 263) and Labillardière, who, 20 years later, conducted a trading station on Pangaimotu, exchanging nails, pieces of iron, and glass bottles, as well as more perishable materials, for food supplies. The pearl button, found 1.4 feet below the surface of the mound could be replaced from the stock of mercantile houses in present-day Tonga.

The midden from top to bottom reveals a gradual decrease in European articles and a corresponding increase in native artifacts, or possible artifacts, excepting the bottom strata, where no artifacts were encountered. In view of the facts that the site is in close contact with the center of European influence in Tonga, and that the Tongans have been using European implements for a century, the absence in the lower half of the midden of any trace of European material culture is significant.

It is to be concluded, then, that the upper strata are of undoubtedly recent age, while the lower strata show no evidence of other than a primitive culture. The presence of the fragment of thatching needle indicates that this was a typical Tongan culture. It would appear that in Tonga a very thin deposit of refuse materials may include strata bearing both very recent and prehistoric remains.

Burial Mound

172 [137] About 200 yards north of the kitchen midden, 50 yards from the western shore of Pangaimotu, an excavation was made in a circular, flat-topped mound, 50 feet in diameter at the base, 24 feet in diameter at the top, and 4 feet in height. The mound was covered with brush and a few trees, including a large hala (*fala; Pandanus*), a sago palm (*longolongo*), and a coconut estimated to be 50 years of age.

172 173 All the informants consulted previous to excavating agreed that the place was not a burial mound, but the *pacpae* upon which there formerly stood a god-house of the god Tui Haafakafanua. The exact date of the destruction of this house is not known, but Takai, a Tongan hero-chieftain belonging to the era immediately preceding that of George I Tupou, and who lived for a time on Pangaimotu, is said to have refused to build his house upon this mound because it had been the dwelling place of a god. The house must have disappeared previous to that time, probably early in the nineteenth century.

172 121 A trench 4 feet in width was cut more than half way through the center of the mound. From this trench, smaller excavations were made on either side, wherever it seemed advisable. Excavation confirmed the story that the mound had been used as a dwelling site.

172 A surface layer, averaging nearly 1 foot in thickness, is heavily charged with ash and charcoal. This layer produced two buried earth ovens, a quantity of burnt coral oven-rock, many marine shells, many bones of small vertebrates, and a few artifacts. The ovens measured respectively, 2.1 feet in diameter, 0.9 foot in depth, and 3.3 feet in diameter, 1 foot in depth. The artifacts consist of: (a) three fragments of bone thatching needles; (b) the half of a segment from the center of a left, human femur, split straight and evenly, but without tool marks; (c) two smooth, black, volcanic pebbles, of the type commonly used for decorating grave mounds, found at the very base of the layer of household refuse; (d) two small potsherds. (See p. 115.) This refuse layer also produced some pig bones, not in coordinating relative position, but grouped within a very small area.

172 764 Under the surface layer, the mound is composed of light-colored, clean sand, entirely unlike the dark, loamy soil which constitutes the surrounding surface and the foundation upon which the mound rests. Buried in this sand were found skeletal material representing 11 individuals; 8 adults in a fairly good state of preservation, and 3 children very poorly preserved (fig. 47, *a*). All the skeletons were disposed prone on the back with arms and legs extended parallel with the major axis of the body and with no definite orientation. Most of the individual remains had been entered at different times, as in other burial grounds. Two burials were directly above an earlier burial, although not in actual contact and orientated differently. The skeletons were found 1 foot to 3 feet below the surface of the mound; the average depth was 2 feet. In a superposed burial, one adult rested directly upon another, without interval, and both were orientated with heads to the northwest. The top burial was in markedly better condition than the bottom. One of the earth ovens described was situated directly above a burial, its rim top 0.4 foot below the mound surface. The condition of the bones varied greatly. Many were fairly well preserved while others were in an advanced state of decomposition. The bones of the children, as might be expected,

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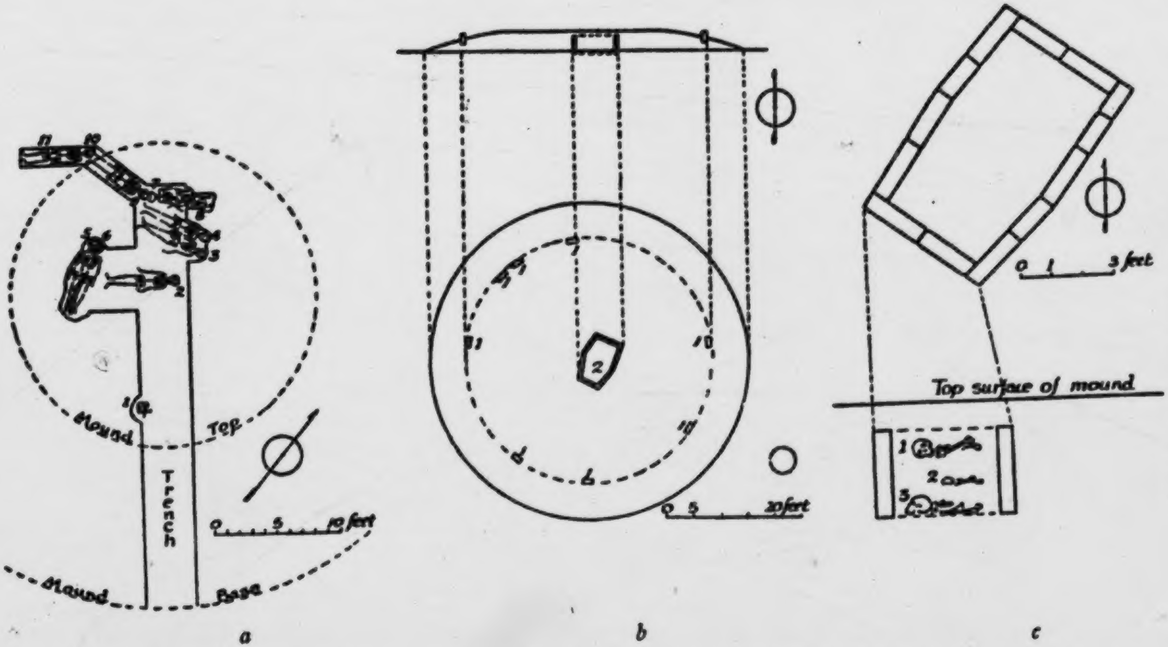
11
10
Mound Top
Trench
Mound Base
0 5 10 feet
1
2
3
4
5
6
7
2
1
10
0 5 20 feet
b
Top surface of mound
0 1 3 feet
1
2
3
a
b
c

FIGURE 47.—*a*, Plan of excavations in mound on Pangaimotu Island, showing position of burials; *b*, *c*, burial mound on island of Motutapu: *b*, general plan—1, monumental stones; 2, slab vault—*c*, vault and position of burials.

172 764 were particularly fragile. No artifacts of any kind were found with the burials, although a dark discoloration of the sand immediately surrounding each burial may have been caused partially by the decay of perishable materials placed with the dead.

172 [252] There can be no doubt that the surface of the mound was covered with a layer of kitchen refuse, thus confirming the statement that the mound was at one time the site of a god-house, the dwelling house of a priest. Cooking was never undertaken in Tonga within the house, but the mound was sufficiently large to accommodate both house and cooking place. The condition of the ovens indicates that they were not used at a very recent date.

It is equally evident that the body of the mound constituted a burial place. All facts point toward a rather primitive interment. The condition of the skeletal material was comparatively good, in spite of a wet climate conducive to rapid decay. The position of the burials above the level of the surrounding land, and the sandy material surrounding the bones, combine to establish ideal drainage conditions and to favor long preservation. There were no signs of intermingling of the kitchen refuse with the clean sand body of the mound. A sharp line of demarkation extends between the two elements throughout the excavated area. The fact that the burials preceded the deposit of the surface stratum is emphasized by the occurrence of an earth oven directly over two of the skeletons.

If the traditional account is to be credited, the surface deposit of the mound had been completed previous to the middle of the nineteenth century, but nothing positive can be said concerning the age of the bottom of the
[262] [354] kitchen deposit. Such deposits may accumulate rapidly in Tonga, owing not only to the great number of marine shellfish eaten by the natives, but more especially to the fact that the coral oven-stones had to be replaced after two or three bakings. On the other hand, examination of a kitchen midden on this same island (p. 102) produced evidence that a very thin deposit of such refuse could represent an appreciable passage of time.

The question arises as to the length of time elapsing between the last burial and the erection of the god-house. In consideration of the great respect shown by the Tongans towards the dead, it is hard to believe that even a god-house would have been built upon a known burial site. This consideration suggests that the house was not built until the inhabitants ceased to remember the mound as a place of burial and, therefore, the interments appear to have been at least prehistoric. According to Sullivan (21), the bones are Polynesian in type. The pottery found in this mound is discussed on pages 115-116.

EUA SITES

133 The island of Eua, ten miles southeast of Tongatabu, is 30 miles in circumference and more than 1000 feet in maximum height. On the northwest

coast of the island, just north of the village of Ohonua, a fresh-water stream 133
flows into the sea. Its high precipitous banks are composed of coral limestone and pitted at intervals with caves. Two of these caves have floor 172
deposits of refuse very rich in ash and charcoal which proved well worth investigation.

1. Cave on the north side of the stream, close to its mouth. The natives who were consulted knew of no name for the cave, nor of any one who had lived there, cooked there, or used it for other purposes. The cave offered little room for any activity.

The orifice of the cave is but 4 feet high, about 10 feet wide, and decreases in 172
size as it recedes horizontally into the cliff for a distance of 8 to 9 feet. However, it 133
offers good shelter from the wind, sun, and rain, as the cliff above the orifice leans out protectingly, and on either side of the cave the cliff extends seaward for a short distance, leaving the site exposed in but one direction. The cave faces somewhat west of northwest. The north side of the cave floor consists of a rocky shelf. The south side is dominated by a perpendicular crevice, 3.9 feet in width at the mouth and gradually narrowing towards the back of the cave. This crevice, to a depth of 3.7 feet, was entirely filled with kitchen refuse, the deposit resting upon yellowish gravel of natural origin. Excavation of this deposit produced nothing indicative of European 172
contact. Many marine shells, a few bones of fish and small land animals, and twenty-two small pieces of primitive pottery were found (p. 115). These were well scattered from top to bottom of the deposit, but were more numerous near the bottom; thus, thirteen of the sherds were found in the bottom 14 inches.

The smallness of the cave argues against its use as a dwelling place. [343]
On the other hand, just such caves are still in use in Eua as kitchens, or cooking places. The protection afforded against wind and rain favors such use. In all probability, this cave was a kitchen.

That no indications of contact with European culture were found in this deposit indicates a comparative plentitude of pottery preceding European contact.

2. Cave on the south side of the stream, nearly opposite Cave 1 and 172
almost within the limits of the village of Ohonua. Cave 2 bears the name 133
Anatuli (Cave-of-refuge). This comparatively large cave faces north, its floor being about 15 feet above stream level. From its orifice, 33 feet wide, the cave expands somewhat near its center and contracts again at the rear, and is 8 feet in height at the center of the arch. The floor has a maximum horizontal depth of 26 feet, its outer edge merging into a steep decline, or wash, which ends in a flat terrace 5 feet below. The more or less level 172
surface of the floor is uniformly discolored from an abundance of fine charcoal, or soot. Old residents of Ohonua accounted for this discoloration by 172
the fact that, within their memories, the cave had been extensively used as a 386
place where *tuitui* nuts were burned for the purpose of obtaining soot for use as a color pigment.

172 121 Two vertical pits were sunk in the floor of the cave to depths of 3.1 feet and 3.2 feet, respectively. Bedrock was encountered. The first shaft was 3 feet by 3.5 feet square, the second was 2.2 feet wide and 8 feet long. Both excavations may be described as a unit.

172 A hard surface layer, about 0.7 foot thick, is very rich in carbonaceous materials. Below this is a loosely packed mass of earth, 2 to 2.2 feet thick, very rich in whitish ash and burnt coral oven-rock. It rests upon a thin layer of yellowish gravel, which in turn, rests upon bedrock. The entire formation is horizontally stratified. The top layer contained many carbonized shells of the *tuitui* nut, a few bones of fish and of small land vertebrates, and a few scraps of iron of undoubted recent source. The thick under-layer produced, besides quantities of oven-stones, many marine shells and a few bones of fish and of small land vertebrates. A small potsherd was found 2 feet below the surface, near the bottom of the deposit. No other artifacts were found.

As for Cave 1, the data for Cave 2 are meager, but tend to establish a line between the period of intensive pottery use and the period of contact with European culture.

MOTUTAPU SITES

Burial Places

133 The low island of Motutapu, about 2 miles north of the eastern end of Tongatabu, is about one-half mile in length, and one-quarter mile in width. 166 The present native inhabitants are not descendants of the former Motutapu people and, therefore, know nothing of the traditional history or mythology of the place.

172 Near the center of the island, close to the southeast shore, was found a circular, flat-topped earthen mound 55 feet in diameter at the base, 43 feet in diameter across the flat top, and 3.5 feet high, giving the sides a slope of about 30° (fig. 47, *b*). The surface of the mound appeared to be a mixture of sand and dark, loamy soil. Around the margin of the flat top, forming an outlining circle, is a series of flat, coralline slabs, irregularly spaced, roughly dressed, each planted in a vertical position. Some of these stones stand only a few inches above the ground. They average 0.5 foot in thickness and a little more than 1 foot in length. The largest is 1.9 feet in height, 2 feet in length, and 0.6 foot in thickness. 172 764 Excavation started at the central top of the mound soon discovered the upper edges of what proved to be a stone burial enclosure (fig. 47, *c*).

The burial place consisted of a dozen rectangular, coral slabs set up vertically on edge to form a six-sided, somewhat coffin-shaped compartment. The two parallel ends of this compartment are, respectively, 5 feet and 4.5 feet in length and are placed 8 feet apart. The sides form a slight outward angle in connecting the two ends. Ends and sides are 0.5 to 0.6 foot thick. The horizontal plane defined by the tops of these stones is 0.9 foot below the surface of the mound and the lower edges of the stones extends 0.3 foot into the indigenous soil. The stones were carefully dressed, showing straight, fairly smooth surfaces and well defined edges. They were invariably placed with the major axis vertical, and fitted together so tightly, edge to edge, as to exclude all interval. The corners were lapped evenly, with no apparent regard as to which stone was outside in the lapping. The largest stone is 3.1 feet high, 2 feet wide, and 0.6 foot thick. The average size of the stones is not much less. 172 764

The area inside the vault, if this floorless, lidless, solidly filled structure may be so designated, was found to contain fine, clean, light-colored sand to a depth of 3.7 feet, where it encounters the natural soil upon which the mound rests. The remains of three adult burials were found in this sand: one 1.1 feet below the mound surface; another beside the first at a depth of 1.4 feet; and the third immediately below the second at a depth of 2 feet. The skeletal material was in such an advanced state of decomposition that no additional data were obtainable. No artifacts were found. The stained spots in the sand surrounding the bones, characteristic of the burial site examined on Pangaimotu (p. 106), were not observed here.

The type of burial found at Motutapu is not known elsewhere in Tonga. The stones suggest the stone vault ordinarily present in chiefly burial places, but the detail of the structure is entirely different. It might be assumed that the structure represents an early stage in the development of the vault, but the occurrence of stone vaults elsewhere in Oceania suggests caution in formulating theories of local development. The structure might just as well be a retrogressive type of vault as a precursory type. The coffin-shape of the enclosure might even be due to European influence. This is improbable, however, as there is no record of the burial of any historic chieftain on Motutapu, and no such pains would have been taken in preparing the grave of one of less than chiefly rank. A local development of the stone vault idea might explain the unique features of this burial site. [171]

The condition of the bones suggest long burial, but the influence of the stone enclosure upon the state of preservation is uncertain. Water, seeping into the loose sand after heavy rains, could escape but slowly through the joints of the close-fitting stones and the packed natural surface below. The bones would be, therefore, more or less water-soaked during the rainy season of each year. This would tend to accelerate the rapidity of their decomposition. 172

All that can be said, therefore, is that this is a unique type of stone-walled burial place, probably preceding the innovation of European culture. [764]

KITCHEN MIDDEN

About 100 yards northeast of the burial place on Motutapu Island is a sand dune with its flattened top noticeably rich in charcoal and ash materials. A vertical pit 5 feet square was sunk into this deposit near its center. [121]

The first foot of material removed consisted of characteristic kitchen refuse, containing much light-colored ash, charcoal, burnt coral oven-rock, and not a few bones of

172 fish and small land vertebrates. The top 0.5 foot produced many scraps of rusty iron and several pieces of green bottle glass. One small potsherd was found 0.4 foot below the surface (p. 115). The remaining 0.5 foot contained no evidence of European culture. It produced three small potsherds. Below this was encountered a layer of clean beach sand 0.3 foot in thickness, entirely free from evidence of human occupation. This sand deposit rested upon another stratum of kitchen refuse, 0.4 foot in thickness, which besides the usual assortment of shells and bones, produced one potsherd; below this was the dark colored sandy loam characteristic of the surrounding land surface. This was traced to rock bottom without discovering any further kitchen midden material.

Pottery was present in all strata containing kitchen refuse. The small size of the excavation, and the small quantity of material obtained will not allow a consideration of quantity relative to depth. The abrupt disappearance of modern materials below the first 0.5 foot indicates a formation preceding European contact. No culture break was apparent between the two sand-intervaled refuse deposits.

TONGATABU SITES

Kitchen Middens

Tongatabu, the largest island in the Tongan archipelago and the center of both prehistoric and historic population, furnished the largest and most productive kitchen middens, as was to be expected. Three kitchen middens and two burial places were excavated here.

1. On the road connecting Nukualofa and Pea, horizontal strata of charcoal and ash are exposed in a quarry.

The face of this cut is, in places, 8 feet in height, 6 feet of earth resting upon 2 feet of bedrock. The top 2 feet of the earthern exposure proved to be part of an artificial bank erected a few years ago by European road builders. The true surface of the kitchen deposit, therefore, is 2 feet below the actual surface. The line of demarkation between these two formations was readily apparent.

[121] Two excavations were made at favorable spots in this kitchen midden: one 3 feet wide and 6 feet long; the other 3 feet wide and 4 feet long. Both pits were carried to rock bottom. From the true surface down, four distinct strata were encountered.

Stratum I, 2.1 feet thick, is made up of characteristic kitchen refuse, rich in charcoal, light-colored ash and burnt oven-rock; Stratum II consists of a bed of yellowish clay, 1.2 feet thick; Stratum III, 0.6 foot thick, is like Stratum I; Stratum IV, resting directly on bedrock, is like Stratum II. Stratum II alone was productive of culture data of any special interest. Thirty-seven potsherds, distributed evenly from top to bottom of the formation, were found there.

The interesting fact regarding the products of these excavations is the presence of a kitchen deposit stratum, devoid of pottery, lying below and clearly separate from the pottery bearing stratum. This would seem to indicate a culture period preceding the use, or common use, of pottery. The fact seems more suggestive when an additional fact is taken into consideration, that there was not a section of the surface deposit 3 inches thick that did not contain pottery, whereas the lower deposit was 7 inches thick.
[128] However, the excavations were altogether too small in size to warrant the

drawing of too hard and fast conclusions from their products. A single 172 heavy rainstorm might result in the deposit of clay, such as Stratum II, [128] so the occurrence of this stratum as an interval formation between Stratum I and Stratum III does not necessarily denote an important time interval. The absence of any indication of European contact at this site is noteworthy.

2. On the property leased by the Seventh Day Adventist Mission, in Nukualofa, on the Nukualofa-Pea road.

> This site is a broad, low mound nowhere more than 4 feet high and has large, irregular lateral dimensions. Pieces of pottery seen protruding from the vertical road-side exposure of the mound led to investigation. Near the highest point of elevation, [121] about 20 feet south of the front veranda of the mission, a pit 5 feet square was sunk to a depth of 2.8 feet, penetrating 0.5 foot into the indigenous soil below the base of the kitchen deposit.
>
> The surface, to a depth of 0.6 foot, was found to be composed of an unstratified mixture of ashy, carbonaceous soil, fine light-colored sand and coral gravel. In this surface material were found: many marine shells; a few bones of fish and small land vertebrates; a few scattered and badly broken fragments of human bones; a small quantity of burnt coral oven-rock; a few volcanic oven-stones; and 286 small potsherds. Some of the potsherds were actually lying on the surface, but the number of pieces gradually increased with depth.
>
> The remaining 1.7 feet of the kitchen refuse deposit is composed of soil which was absolutely free from the light-colored sand found above it, and very rich in light gray ash with some pockets of charcoal included. Moreover, this material is horizontally stratified. Traces of burnt coral oven-rock and a considerable number of volcanic oven-stones were present. No human skeletal material was found. Marine shells were plentiful, and some bones of fish and small land vertebrates. In all, this undisturbed formation produced 1,192 small potsherds, most of them from near the center of the deposit. In the top 0.4 foot were found 321 and in the bottom 0.7 foot only 151. A piece of artificially shaped shell and a similarly treated piece of volcanic stone were found 0.4 foot and 0.3 foot above the bottom of the deposit, respectively. In addition [121] to the pottery found in the excavation, a hasty examination of the road-cut exposure produced 30 more potsherds. These were found evenly distributed throughout the entire length of the cut, and on both sides of the road.

At this site 1508 pieces of pottery were found, 1478 in an excavation 5 feet square and 2.3 feet deep, excluding the bottom 0.5 foot of clay. That would make an average of more than 26 to 1 cubic foot of soil examined. Near the center of the deposit, the average increases to about 50 to 1 cubic foot. As indicated by the gleanings from the exposure bordering the road, it is highly probable that this heavy deposit of pottery is more or less continuous throughout the mound. If this quantity of pottery means anything, it points towards a very common use of pottery during the time when the deposit was in course of formation. A salient feature is the entire absence of any indication of contact with European culture.

But the relatively close contact of these potsherds should not be over emphasized. Very little burnt, coral oven-stone, characteristic of all other Tongan kitchen middens examined, were found in this deposit but many

172 [354] volcanic oven-stones are present. A volcanic stone will serve in an oven for an indefinite period of time. It therefore marks a deposit where the accumulation of materials may have been slow. It logically follows that the close intervals between the many pieces of pottery is due to a very gradual deposit of the material which contained them. The very fragmentary condition of the pottery, and the large number of these pieces that would be required to reconstruct one pot, must also be taken into consideration. It might be argued that a very few pots could have supplied all the material taken from the excavation. Such a contention, however, entirely disregards the stratification data, and is completely controverted by the variety of rim shapes which the specimens show (fig. 49).

The increased quantity of pottery near the center of the deposit would seem to reflect the time of maximum population of the site, although it might be interpreted to indicate the time of maximum use of pottery, regardless of population.

The head of the Seventh Day Adventists Mission was certain that the surface of this mound has been plowed frequently within the last generation. This accounts for the lack of stratification in the top 0.7 foot of the deposit, and renders the mixed occurence there of pottery, ash, clean sand, marine shells, and human bones void of importance. There is doubt as to 172 764 whether any potsherds rightfully belong on the surface. The skeletal material certainly represents shallow burials, or surface burials covered with transported sand. Surface burials seem likely, unless the mound was a great deal higher at one time than it is now. Whatever the mode of burial, the association of the skeletal material with pottery does not establish any cultural relationship.

According to Tui Vakano, the human bones mark the remains of burials made at this site after the first battle between George I of Tonga and the rebels of Pea, probably disposing of the dead from the loyal army. The burials were therefore historic in period.

172 121 3. On the shore of the lagoon immediately northwest of Johanson's store at Mua. It was particularly desirable to find some deposit of human refuse worthy of excavation at Mua, the ancient residence of the old dynasty of Tongan kings, as this was the center of native culture for many generations preceding European discovery of the archipelago. The deposit found, although not a highly promising one, is rich in ash and charcoal, and horizontally stratified.

172 [121] The site of the kitchen midden is a low, vertical exposure. In excavating, a strip was removed lengthwise with the embankment, 7 feet long, 2 feet wide, and 2 feet deep. Only the top 0.7 foot produced kitchen refuse materials, including 12 small potsherds. The remainder of the exposed column of earth consisted of soil which was representative of adjoining natural formations and which rested upon characteristic,

clean beach sand. The only interesting material found at this site was pottery (p.). 172
There is no evidence of European contact.

BURIAL PLACES

1. At langi Tamatou (p. 55), a fortunate and unexpected opportunity 172
affording itself, it was decided to excavate this structure, hoping thereby 121
to determine the nature of the stone vault, to obtain specimens of primitive
artifacts, to acquire data on burial methods, and to substantiate or confound the truth of the tradition that a wooden image constituted the only burial therein.

The opportunity for investigation was limited in scope of time to a 172
single day. Consequently, the maximum available force of men, under the 114
direct orders of a high Tongan chieftain, was set to work. The consent [122]
of these men to participate in such labor was only obtained through chiefly
command.

In an endeavor to locate a vault, or burial deposit, holes 4 to 5 feet deep were 172
sunk at intervals of 6 feet into the top of the mound. A large pocket of fine, light-
colored sand, such as invariably surrounds native burials, was encountered near the 121
center of the examined area. This pocket was extensively and carefully excavated but produced nothing. Further excavation produced equally negative results.

It is remarkable that such an extensive and well built stone structure, designed to 172
be used as a king's cemetery, should lack a stone vault. According to tradition, all 764
such structures are so equipped, and many of them are known to contain vaults. It is equally certain that Tamatou has no vault.

This tomb belongs to the small series of stone tombs preceding the great stone langis which occur so numerously in ancient Lapaha (p. 96). There is reason to believe that it is among the first stone langis to be built in Tonga and the absence of a vault tends to question the ancient existence
of stone vaults in Tonga. Investigation on a scale and of a nature that [128]
present native standards will not tolerate would be required to furnish
an intelligent answer to this question.

My stubborn presumption in calling this structure a tomb, in spite of 172
the negative evidence, seems justified by the extensive mythological refer- 764
ence to the place. Tradition states that no man was buried there and exca- 173
vation supported this statement. A failure to locate the wooden doll said to have been buried there was to have been expected. The figure is said by some to have been made of the soft wood of the fau (*Hibiscus tiliaceus*), a material that would disintegrate and be lost in the surrounding soil in a relatively short length of time.

2. At langi Folokamanu. 172

There is reason to believe that Folokamanu is one of the oldest langis in Tonga 764
(p. 69). A daughter of one of the early kings is said to have been buried here.

172 In excavating, an initial attempt was made to locate a stone vault. No vault was
764 found. By means of 69 feet of trenching averaging 5.3 feet deep, the central interior
[121] of the mound was shown to consist of fine, light-colored sand, including red coral sand of a variety to be found only on certain of the beaches of Vavau. Surrounding this central body of choice sand was an inferior grade of sand, although this too was clean and evidently of artificial placement.

Skeletal material was found in the central body of sand. One skeleton of an adult was found 2 feet below the surface of the mound, situated in a central position (fig. 48). The body had been disposed prone on the back, extended, with the head to the northwest. Immediately over this burial were the scattered and fragmentary remains of another, or other burials. According to all indications, the fragmentary material, which was in a very poor state of preservation, had been removed in excavating for the burial of the individual represented by the intact skeleton. Following this intrusive burial, the scattered bones of the disturbed burial had been indiscriminately thrown back into the burial pit on top of the new interment. No artifacts were found associated with the bones.

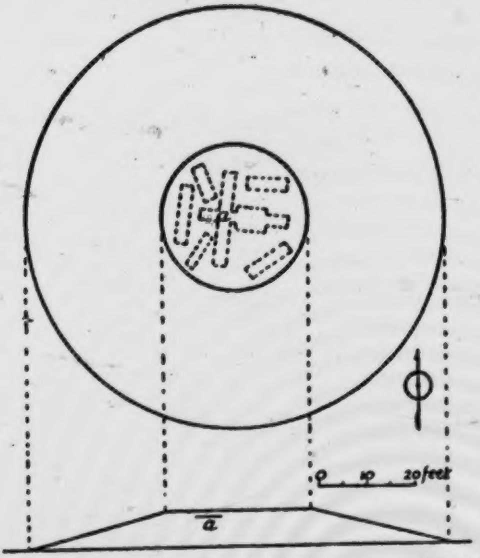

FIGURE 48.—Plan of excavations at langi Folokamanu: *a*, site of burials, dashed lines show position of trenches dug during exploration.

The investigation of Folokamanu tends to support the conclusion that the early tombs in Tonga did not contain vaults; that vaults, whether introduced or of local invention, were included in the langi structure as a
[128] relatively late innovation. Such a conclusion is in need of much supporting evidence where it has but a little. My only apology is that other evidence, either positive or negative, is not available.

POTTERY

DESCRIPTION

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Inasmuch as the discovery of pottery in prehistoric Polynesia has no known precedent, the facts regarding this Tongan ware are recorded here in some detail. The potsherds found number 1,587: 2 pieces on Pangaimotu, 5 on Motutapu, 23 pieces at two sites on Eua, and 1,577 at three sites on Tongatabu.

There are no obvious differences in pottery types found at different locations, or at different depths. At first examination, there appeared to be three types of pottery, found mixed and evenly distributed throughout all three of the Tongatabu sites and the Cave II site on Eua; the potsherds found elsewhere were too few to include all varieties. There seemed to be (a) a brick-red, very porous, brittle type, (b) a red-brown, harder, lightly burnished type, and (c) a relatively hard, black type. Excellent examples of each of these varieties could be selected easily from among any considerable number of sherds. But when it was attempted to assign every potsherd to one or another of these three classes, it soon developed that the extremes of each type blended so well into the extremes of the other types that no satisfactory lines could be drawn between them. 172 323 128 Moreover, a given piece of pottery might have a black-textured interval, a brick-red inner surface, and a burnished brown exterior, or any other combination of the elements of classification. This made it necessary to include all specimens under a single type, paying careful attention to the large range of variations. The very small size of even the largest sherds contributed to give the appearance of several distinct types.

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The pottery is highly porous, lightly fired, fragile ware. The consistently red ware is noticeably the softest, the smooth, brown ware denser, the consistently dark brown and black ware the hardest, showing the coinciding of greater density with deeper coloring to be largely indicative of the degree of firing. Thus, much of the variety in color is due to uneven firing. In some pots the exterior surface is probably soot-blackened from use as a cooking vessel and the interior surface discolored through contact with the cooking food. Some sherds that are uniformly colored a dead black through and through suggest dyeing. Most of the pottery is so porous that any liquid dye into which it might be dipped would thoroughly saturate it. Some examples of slipped surfacing are noticeable, usually a consistently thin, abruptly distinct coating of bright, unnatural red, or of pale terra cotta, upon a ground of decidedly different color.

The surfaces of the sherds range from moderately smooth to lightly burnished. The poorest type of surface shows light, lateral striation,

172 apparently due to finger-smoothing by the potter. Some spatula striations
323 are so smooth and regular as to suggest ornamental treatment. A good
[531] proportion of the material shows smooth surfacing of an inferior kind,
free from major irregularities but possessing no marked finish. Lightly burnished surfaces are not uncommon and are usually associated with darker coloring.

172 Two methods of design were recognized, or one certain and a probable
323 second method. The certain type of decoration consists of narrow, incised
531 lines and accompanying series of dots, arranged in straight lines and small
curves which seem to have been made with a sharply pointed instrument. This decoration is not common, occurring on only eleven pieces (Pl. VI, *A*). The doubtful type of decoration consists of corrugations, placed laterally about the vessel and roughly parallel. In two of the three pieces showing this technique, the decoration is near the rim. The pottery is characterized, from an ornamental standpoint, by its general lack of decorative treatment.

172 It is difficult to determine the original shapes of the pottery vessels
represented by the sherds, due largely to the prevailing small size of the
323 sherds. Attempts to fit sherds together to form larger elements were
128 entirely without profitable results. The curves of various pieces suggested
172 globose vessels 10 to 45 cm. in maximum diameter. Pieces ranged in thick-
ness from 0.35 to 2.2 cm. The average thickness is about 0.75 cm. Other
323 pieces show a contact between a curving side and a flat surface, presumably
a flat base. The approximate angle defined by such surface bends is anywhere from 25° to 45° (fig. 49, *b*).

Most of the 106 rim pieces are horizontally squared, the others rounded. In most sherds the rim is greater in diameter than that portion immediately below its lip. Generally the walls of the vessel narrow immediately preceding the rim, and swell with its culmination. In some specimens this ultimate swelling is greater than the actual breadth of the rim. Some straight rims have a uniform diameter throughout. There are no positive indications of bottles, or vessels with true necks. Some vessels appear to have contracted tops but wide orifices. In others the rim curls back with an outward flare, resulting in a funnel-shaped opening (fig. 49, *a*). Two pieces, both from the Nukualofa site, show evidence of a coiling technique of manufacture.

DISCUSSION

The available evidence certainly indicates that pottery was used in prehistoric Tonga. At several scattered places it was found, in stratified deposits, occurring most plentifully in strata free from evidence of European contact. Where European culture-bearing strata occurred, the pottery was

found to be much more plentiful in lower strata where the European elements 172
were lacking. The occurrence of pottery at various, scattered sites indicates 323
a general rather than a peculiarly local use. The ware may be described, briefly, as rude, indifferently made, and serviceable rather than ornamental.

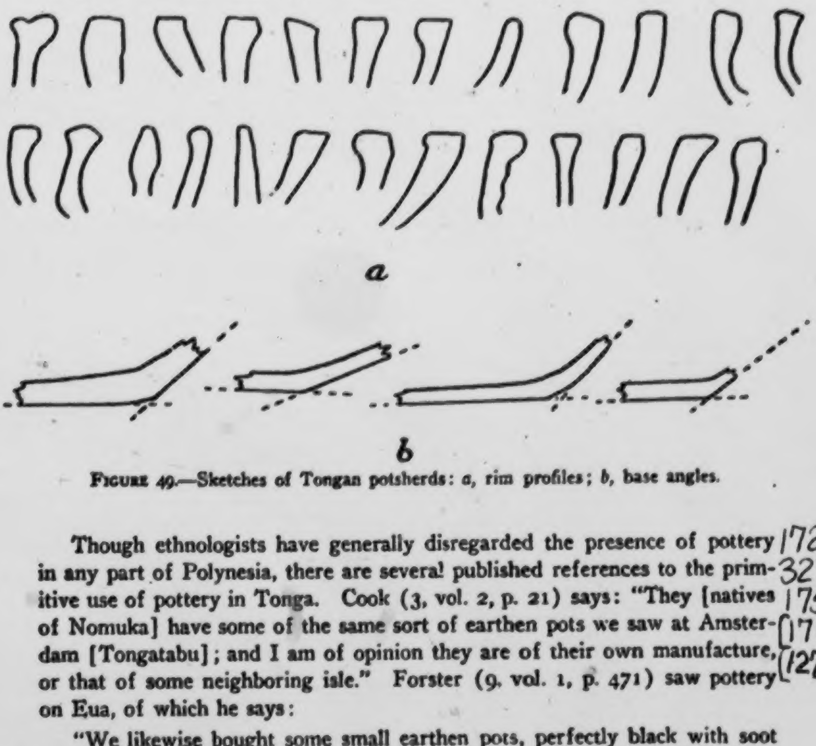

FIGURE 49.—Sketches of Tongan potsherds: *a*, rim profiles; *b*, base angles.

Though ethnologists have generally disregarded the presence of pottery 172
in any part of Polynesia, there are several published references to the prim- 323
itive use of pottery in Tonga. Cook (3, vol. 2, p. 21) says: "They [natives 175
of Nomuka] have some of the same sort of earthen pots we saw at Amster- [171]
dam [Tongatabu]; and I am of opinion they are of their own manufacture, [127]
or that of some neighboring isle." Forster (9, vol. 1, p. 471) saw pottery on Eua, of which he says:

"We likewise bought some small earthen pots, perfectly black with soot on the outside, and suspected them to be memorials of Tasman's voyage; but afterwards we rather believed that they were manufactured by the natives themselves." D'Urville (5, vol. 4, p. 281) finishes a paragraph on Tongan cooking methods with: ". . . enfin quelquefois ils les font bouillir dans les vases en terre qu'ils tirent des isles Viti."

Dillon (6, vol. 2, p. 81) contributes the following to the historical evidence: "They perform the process of boiling in earthen pots of the manufacture of the Feejee Islands. . . ." [171]

The accounts, few as they are, are conflicting. Cook and Forster thought 172
the pottery of local manufacture. D'Urville and Dillon positively state that 323
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172 it was brought from Fiji, but neither of these writers, whose works include
323 a great deal of material borrowed from previous reports, especially Mariner's,
127 were above expressing an opinion as a fact, even when the opinion was
114 appropriated from another writer, without personal investigation. Of the
four writers, Cook was the most careful observer and authentic reporter, but his contribution is admittedly an opinion, of which Forster's statement is probably a reflection.

172 Burton (1, p. 52) has shown that the Fijians were the best potters in
323 Oceania and it seems highly probable that Tongan pottery had its original
171 conception in Fiji (Pl. VI, *B*), but it seems altogether improbable that the
Tongans, using pottery rather extensively as it seems, went to Fiji for all
[181] their pots. The very character of the Tongan, with his alert resourcefulness,
striking adaptibility, and eager readiness to learn, contradicts such a possibility.

[128] Unfortunately, the amount and condition of the material available
from Tonga is such that a direct comparison with modern Fijian specimens is not as profitable as could be wished. However, such a comparison bears some fruit.

Fijian pottery consists of red and brown ware, lightly fired (20, pp. 38-39). In these respects it is identical to Tongan ware. Fijian ware includes two distinct types, cooking pots and decorated vessels. The cooking-pot ware seems identical in material and surface to a large proportion
172 of the Tongan potsherds. The decorated ware includes many prettily designed
323 drinking cups, vessels with compound bodies, handled ware, and
vessels with eccentric shapes, all more or less embellished with decorative
171 fillets and nodes in salient relief, and with incised lines and simple patterns
531 (8, pp 194-195). No examples of relief decoration, or of elaborate shapes,
were found in examining the Tongan ware. Not even the broken fragment of a pottery handle was found. Incised lines and simple patterns decorate several of the sherds, but the design and technique differ materially from those I have seen on Fijian pottery, which is tempered with sand (24, p. 5).
172 The Tongan pieces show no apparent tempering of any kind, but may contain
323 a small amount of fine sand. The finer ware of Fiji is varnished, while
still hot, with an application of the gum of the *dakau* (19, pp. 357-359).
171 It is doubtful whether this surfacing would have long survived under conditions
accompanying the accumulation of kitchen refuse. In any case, no such surfacing was seen on Tongan ware although some pieces exhibit smooth, semi-glossy exteriors. A red surface was applied to some Fijian vessels through the use of a vegetable stain (24, p. 5). A similar treatment may account for the unnaturally bright red surfaces of some Tongan sherds.

Tongan pottery seems to resemble that of Fiji in many essential traits, 172
as is to be expected, but to differ somewhat from it in many details. The 323
similarity between the cooking wares is much more pronounced than that 171
between the finer, decorated ware.

Good sources of clay in Tonga were not observed, but there were volcanic 135
as well as coral islands in the group to serve as possible sources, and clay is probably not uncommon. There certainly is no lack of stubborn, sticky mud, as the roads will testify.

CONCLUSION

The culture traits and products disclosed by archaeological investigations 172
in Tonga are representative of the entire group rather than of peculiarly 184
different districts; a single culture was disclosed. Certain rare, unique features may have been either local peculiarities within the culture, isolated innovations resulting from foreign diffusion, or monuments of an intruding culture. Their rare occurrence renders them generally unimportant. A list of these unique features might include the Fijian type of house platform observed on the island of Mango, the square house platform on the island of Utungaki, the stone fortification on the island of Late, the petroglyphs on the islands of Telekivavau and Tonumea, and even the great trilithon on Tongatabu.

On the other hand, the Tongan tendency towards the quick adoption of new ideas, whether of local or foreign conception, a characteristic very apparent in the historic Tongan, could only have resulted in a mottled culture with many peculiar expressions, which might have included any or all such highly individualistic features.

Not only are sub-divisions of negligible importance in this province, but 172
no reasonable indication of a human culture or foreign race of people preceding the culture and race of its historic occupation was encountered. This statement is made with a full realization of the paucity of known data reflecting any great antiquity, but with the feeling that this paucity is principally due to the non-existence of such data.

A great part of the investigation was limited to the Tongatabu group 172
of islands. This was not due to any arbitrary selection on my part, but rather 121
to the illuminating fact that sites apparently worthy of investigation, considering the limited time available for work, are relatively rare elsewhere. This is true of structures of stone and earth, accumulations of kitchen refuse, and all other interesting features, definitely indicating a much more intesively inhabited state in the south of the archipelago than in the north. Native traditions to the effect that Tongatabu was settled before Haapai 172
and Vavau, and that these groups remained but sparsely settled until com- 173

172 173 paratively recent times, are thus supported by facts resulting from the work of the expedition.

172 333 Investigations shed not a little light upon certain elements of primitive culture that are now irrevocably lost to the ethnologist: the sources of building stone and the methods of its quarrying; the occurrence of quarry sites on islands far removed from any building sites, supporting the tradition of the transportation by boat of large stones over considerable water distances; the detail of stone structural work and the technical methods involved in its execution; the decorative element in Tongan culture as expressed in stone.

172 643 The great stone structures of Tonga definitely reflect the strongly centralized socio-political organization of its primitive inhabitants. The existence of a king, holding unlimited sway over a united Tonga, was an historical fact at the time of the discovery of the archipelago by Europeans, and the long rule of a single dynasty of monarchs is clearly pictured in its earlier prime by native tradition. Archaeological support is hardly needed to substantiate the despotic nature of the powers of the Tui Tonga, and yet its contribution of evidence is by no means the least persuasive from the available list of data.

172 333 The building of the truely colossal stone structures which occur so numerously in the little kingdom involved a tremendous amount of labor, no small degree of skill, and a considerable expenditure of time. Long years of training, well organized effort, and absolute control of labor under a directing head were essential factors necessary to enable the successful construction of one of the larger langis.

172 333 643 The power of religious fervor, if properly organized under the control of a constructive leader, could account for such laborious creations, but most Tongan monuments were apparently constructed for the benefit of individuals in a single noble family, whose position in society, if religious, was primarily political. Here we see the hand of an exalted lord building for his own glory, rather than the zeal of an inspired populace erecting temples to its gods. It was the power vested in the Tui Tonga that made it possible for him to ordain the training of men from youth in the arts of masonry, and to draft all the manual labor required for any necessary duration of time. No local chieftain, with but the freewill assistance of the men included in the village or district constituency, could be expected to attain success in such a project.

In this connection, it is interesting to note that the probable development and ensuing decline of the stone-tomb culture seems to have coincided with a parallel rise and fall in the power of the Tui Tonga. It is the powerful Tui Tatui whose name is first associated with stone construction by native tradition, and the last few Tui Tonga on the list, weakened by a series of successful rebellions, made no important contributions to stone work.

172 333 171 The problem of the origin of stone construction in Tonga is one of special interest because of a possible relationship between the masonry of Tonga and of other provinces in Oceania. Of structures in dressed stone which are found in many south Pacific islands, and of which even fairly accurate descriptions are available, those of Fiji seem to be closest in type to those of Tonga. I do not mean to include all Tongan and all Fijian structures in such a comparison, but the platform tomb with slab vault occurs in both Tonga and Fiji, as do less important structures and a great many technical processes and resultant effects involved in the stone mason's art. At present there is no way of determining whether the art of masonry was carried from Tonga to Fiji, or contrawise, although it is highly probable that each profited from the ideas of the other during later stages of development. A strong cultural connection cannot be denied. The abrupt, initial occurrence of stone masonry, in a highly developed stage, during the reign of Tui Tatui, as indicated by native tradition, suggests an introduction at that time of the art into Tonga from some outside source; the same traditions definitely describe a Fijian intrusion at that time. A study of the stone structures of Tonga tends to support the general truth of these traditions to a remarkable degree.

There is little similarity between the dressed stone structures of Samoa, such as they exist, and those of either Tonga or Fiji, in spite of the close cultural and racial ties connecting Tonga and Samoa. A few, rather superior Samoan structures were probably built by the Tongans during a period of Tongan political dominance over her larger relative. Excluding these structures from consideration, Samoan masonry was peculiarly different from the more highly developed stone craft of Tonga. A basic majority of the culture traits of Tonga appear to have had their immediate origin in Samoa, which was certainly settled long before Tonga. Tongan and Samoan traditions both name Samoa as the ancestral home of the Tongans. From this it seems reasonably clear that Tongan masonry had a source different from that of Tongan basic culture.

172 171 764 [333] The burial mound, as it occurs in Tonga, is not a characteristic feature of Samoa. In Fiji it occurs as a common form of burial place. The mound appears to have been the prototype from which the platform and pyramid tombs were developed. This, again, indicates Fiji as the probable source of Tongan stone work.

172 171 333 [501] It may be argued that the art of masonry was more highly developed in Tonga than in Fiji, and is more likely to have originated in the country of its higher development. However, such a conclusion does not necessarily follow. The Tongans are historically known to have discarded their own large sailing vessel, the *tungiaki*, and to have adopted the superior Fijian *ndrua*. In the course of one generation the Tongans were not only building *kalia*, a *ndrua* type of vessel superior to the Fijian product, but were actually

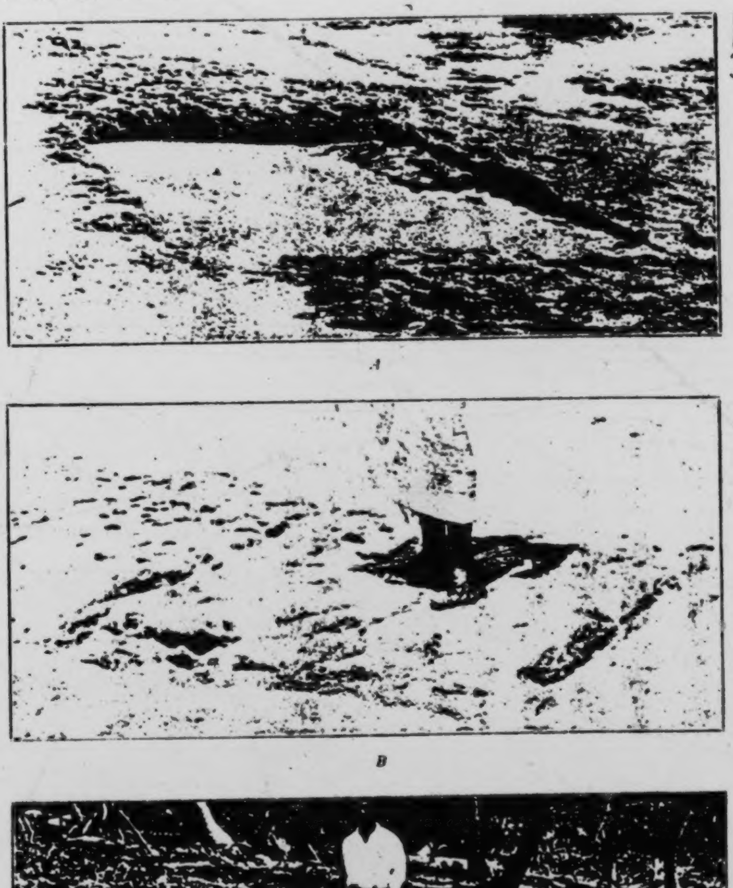
172 being employed by the Fijians to build vessels (17). A similar specialization
171 in stone work, under the encouragement of a favorable political state,
333 might in the same way have produced a technique superior to that of the
501 place from which the craft was introduced.

The importance of Fijian influence over Tongan culture is apparent in
172 aspects other than that of masonry. The fortifications of Tonga were less
171 like those of Samoa than like those of Fiji. Tongan pottery is certainly
[712] Fijian in origin and basic type; Samoa had no pottery. Tongan burial methods
were much more like those of Fiji than of Samoa. The Tongan language
[323] has borrowed a considerable number of Fijian terms. This list of Fijian
[764] elements intrusively present in the culture of Tonga might be carried to a
[192] tedious length.

There is nothing extraordinary in the tendency of Tonga to drift, culturally,
172 farther away from Samoa and closer to Fiji. The Samoans were
171 relatively peaceful; the Fijians were warlike. Tonga, possibly under the
648 influence of its political solidarity, became a power at war, and the mingled
admiration and sympathy of its young men of social prominence went to
Fiji rather than to Samoa. Fiji became the war college of Tonga, whose
young men were sent to this distant seat of interminable quarrels and petty
wars to acquire experience in the war parties of Fijian chieftains. Aside
from this, Samoa was a land of people and things similar to those of Tonga;
Fiji was a land of strange people and strange customs. The spirit of curiosity
and adventure, so apparent in the Tongan, attracted him to the new and
strange rather than to the more familiar and less exciting. He felt the lure
[501] of the unfamiliar, the enchantment of the strange land. The fact that Fiji
possessed a type of sailing vessel far superior to any in either Tonga or
Samoa, and the necessity for Tonga, with its hundred and more scattered
islands, to survive as a political unit only through a mastery of sea craft,
may have had an important bearing on the close cultural relationship which
sprang up between the two countries.

LITERATURE CITED

1. Burton, J. W., The Fiji of today, London, 1910.
2. Collocott, E. E. V., Personal communication.
3. Cook, James, A voyage towards the South Pole and round the world. . . in the years 1772, 1773, 1774, and 1775 (second voyage), 2 vols., London, 1777.
4. Cook, James, A voyage to the Pacific Ocean. . . in the years 1776, 1777, 1778, 1779, and 1780 (third voyage), 3 vols., London. 1784.
5. Dumont-D'Urville, M. J., Voyage de l'Astrolabe, histoire du voyage, 5 vols., Paris, 1832-1834.
6. Dillon, Peter, Voyage in the south seas, 2 vols., London, 1829.
7. Emory, K. P., Archaeology of Fanning Island, manuscript in Bernice P. Bishop Museum.
8. Erskine, J. E., Journal of a cruise among the islands of the western Pacific, London, 1853.
9. Forster, George, Voyage around the world, 2 vols., London, 1777.
10. Gifford, E. W., Tongan place names: B. P. Bishop Mus., Bull. 6, Honolulu, 1923.
11. Gifford, E. W., Personal communication.
12. Gifford, E. W., Tongan society: B. P. Bishop Mus., Bull. —.
13. Gifford, E. W., Tongan myths and tales: B. P. Bishop Mus., Bull. 8, 1924.
14. Linton, Ralph, Archaeology of the Marquesas Islands: B. P. Bishop Mus., Bull. 23, 1925.
15. Mac Donald, Hugh, The sacred stones of Rotuma . . . : Fijian Soc., Trans. for 1917, pp. 47-48, 1918.
16. Mariner, William, An account of the natives of the Tonga Islands, 2 vols., London, 1818.
17. McKern, W. C., Material culture of Tonga: B. P. Bishop Mus., manuscript in preparation.
18. Monfat, A., Le P. and Chevron, Joseph, Etude historique et religieuse, 2 ed., Lyon, 1893.
19. Seeman, Berthold, Viti, An account of a government mission to the Vitian or Fijian islands . . . , Cambridge, 1862.
20. Smythe, Colonel and Smythe, W. J., Ten months in the Fifi Islands, Oxford and London, 1864.
21. Sullivan, L. R., Personal communication.
22. Thomson, Basil, Diversions of a prime minister, London, 1910.
23. Thomson, Basil, The Fijians, London, 1908.
24. Tonganivalu, Deve [trans. Beauclerc, G. A. F. W.], Fijian property and gear: Fijian Soc., Trans., for 1917, pp. 1-18, 1918.
25. Turner, George, Samoa a hundred years ago, London. 1884.
26. Waterhouse, J., King and people of Fiji, London, 1866.
27. West, Thomas, Ten years in south central Polynesia, London, 1865.
28. Williams, Thomas, and Calvert, James, Fiji and the Fijians, 2 vols., London, 1858.



QUARRY SITE ON LIFUKA ISLAND: *A*, EXCAVATION FROM WHICH A LARGE STONE HAS BEEN REMOVED; *B*, GROOVES OUTLINING A STONE INTENDED FOR REMOVAL; *C*, STONES CUT FROM THE REEF.

[End Plate 1.]

7: McKern A-4,5 (1920-1921) 1929 OU9 Tonga OU9

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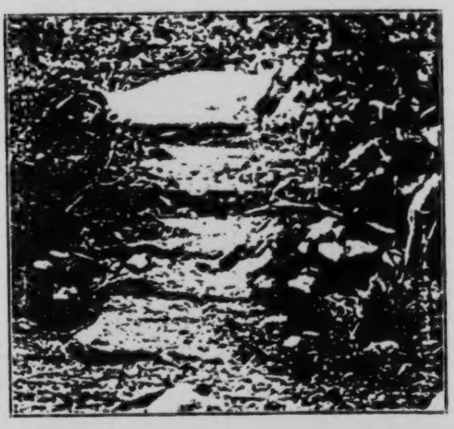

B

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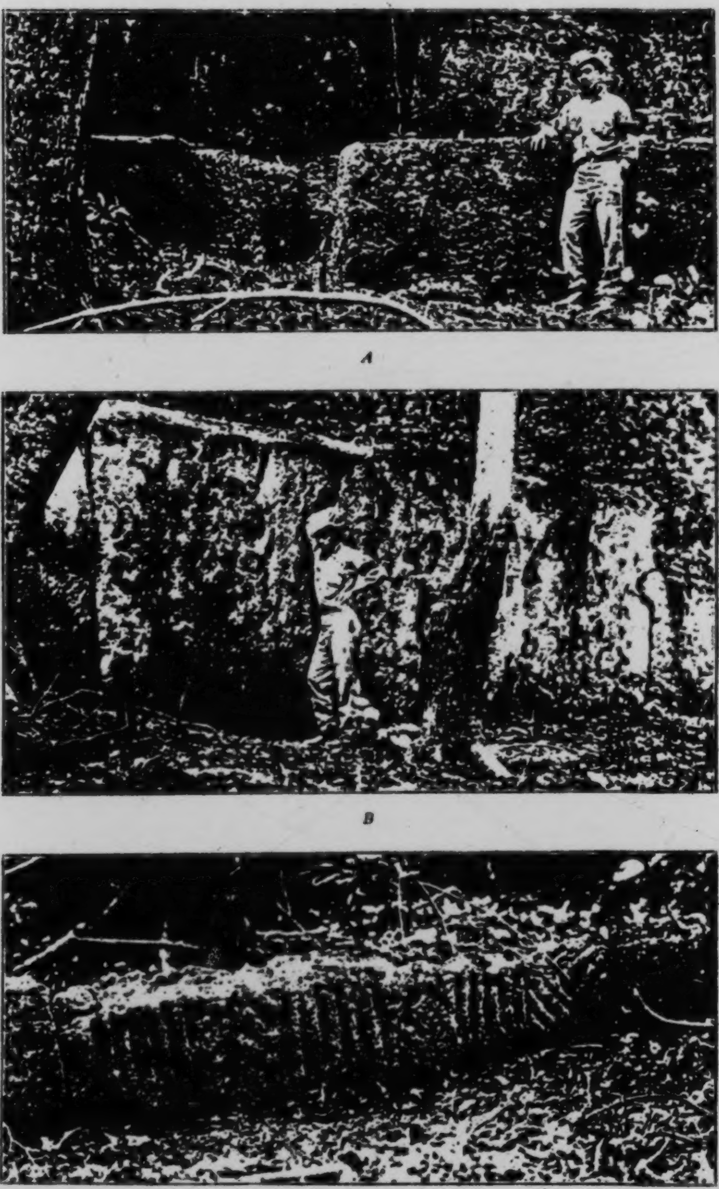
C

A, STAIR-LIKE RAMP ASCENDING THE LANGI KATOA AT MUA, TONGATABU; *B*, RAMP ASCENDING THE LANGI OLOVEHI, HIHIFO, ISLAND OF LIFUKA; *C*, INCLINED RAMP ASCENDING THE ARTIFICIAL MOUND SIUMAFUAUTA, TONGATABU, SHOWN NEAR ITS OUTER END.

[End Plate 2]



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C

A, CORNER STONES OF THE LANGI LEKA, MUA, TONGATABU, SHOWING HOW THE CORNER STONES HAVE SPREAD AND THE RETAINING EARTH WASHED AWAY; *B*, MONUMENTAL STONE IN WALL OF THE LANGI TAUHALA, MUA, TONGATABU; *C*, INCISED DECORATIONS ON STONE OF THE LANGI KATOA, MUA, TONGATABU.

[End Plate 3]

7: McKern A-4,5 (1920-1921) 1929 OU9 Tonga OU9

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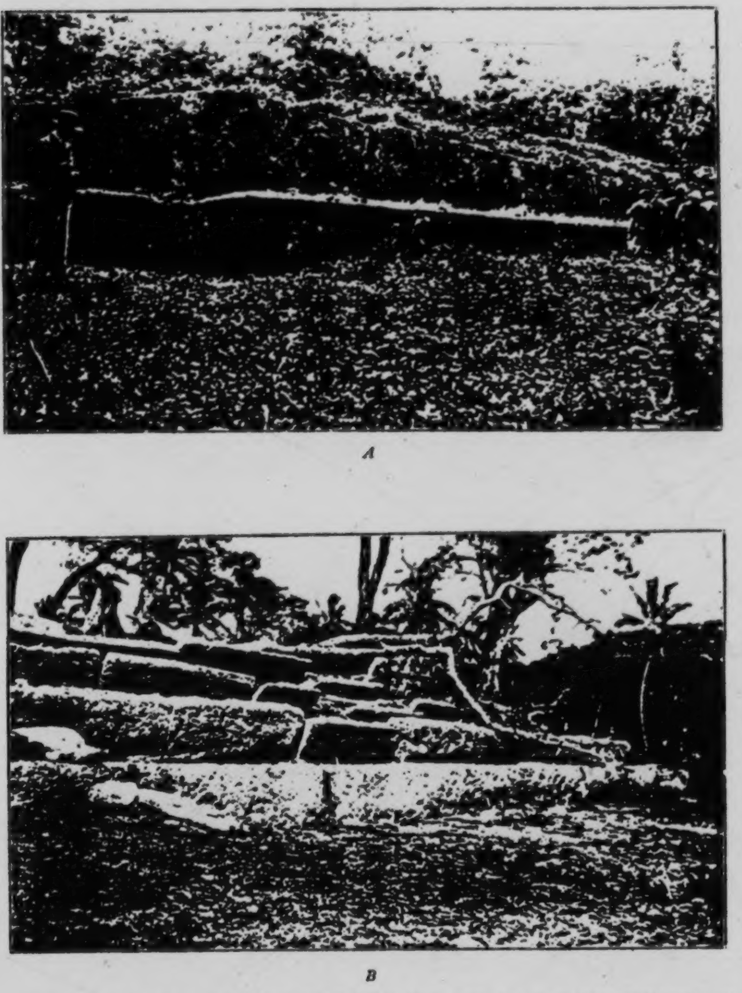


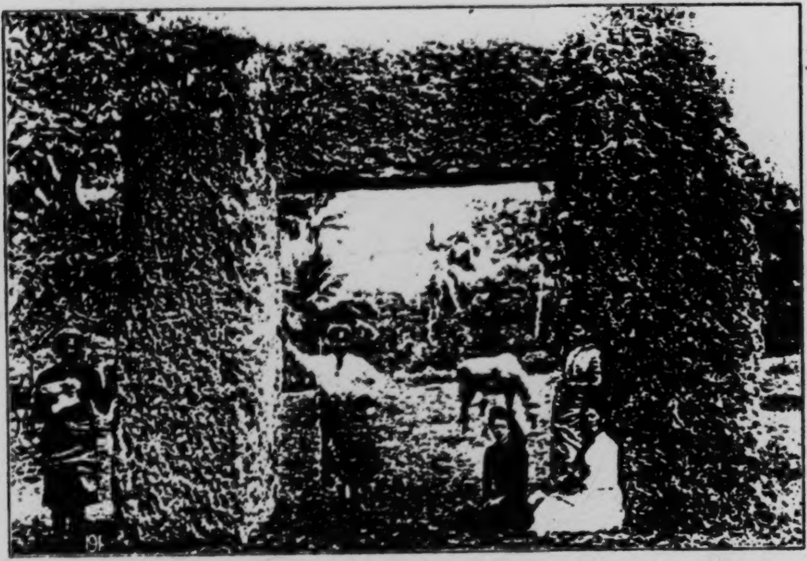
A

B

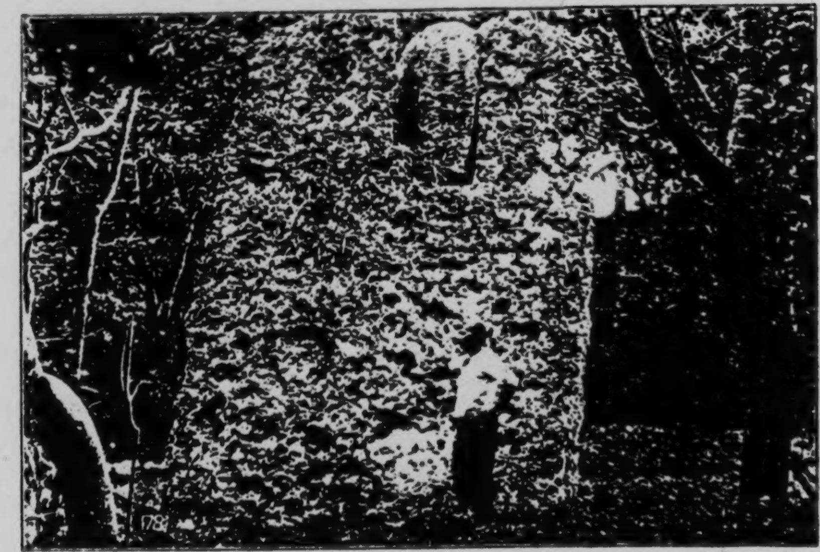
VIEWS OF LANGIS ON SITES RECENTLY CLEARED BY THE GOVERNMENT AT MUA, TONGATABU: *A*, PAEPAE O TELEA; *B*, PUIPUI (PHOTOGRAPHED IN 1926 BY V. GIBBS.)

[End Plate 4]

7: McKern A-4,5 (1920-1921) 1929 OU9 Tonga OU9



A

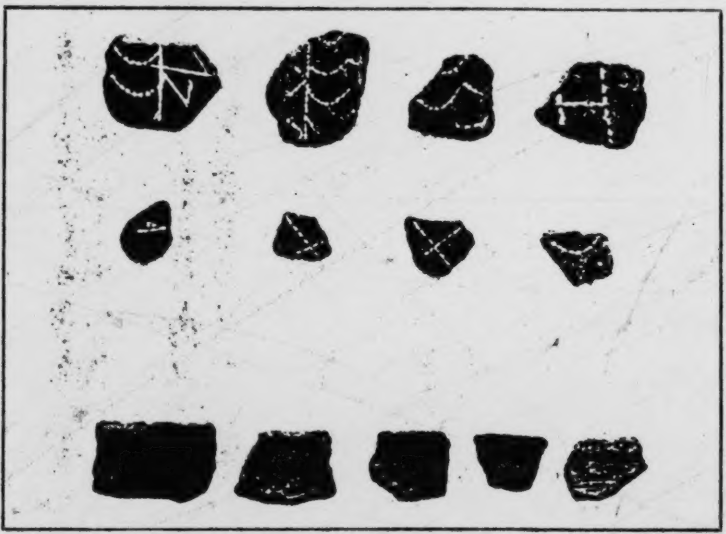


B

HAAMONGAAMAUI: *A*, GENERAL VIEW LOOKING NORTH; *B*, END VIEW SHOWING PORTION OF LINTEL. (FROM AN OLD PRINT IN BERNICE P. BISHOP MUSEUM.)

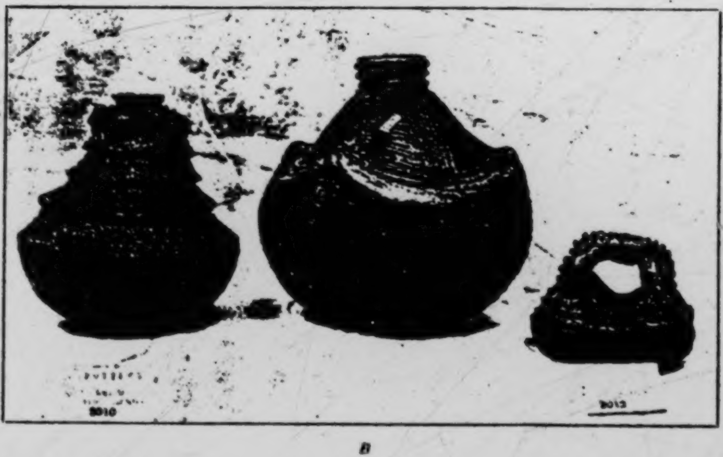
[End Plate 5]

172
531
323



A

172
531
323
171



B

[128] *A*, POTSHERDS TAKEN FROM SITES IN TONGATABU, THE TOP TWO ROWS SHOW INCISED DECORATIONS (PAINTED WHITE TO FACILITATE PHOTOGRAPHY); THE BOTTOM ROW SHOWS RIM PIECES; *B*, FIJIAN POTTERY OF THE EINER TYPE, SHOWING SHAPE, INCISED AND MODELED DECORATIONS, AND VARNISHED SURFACES.

[End Plate 6]

7: McKern OU9 Tonga OU9

174
175

[For further information on historical reconstruction and history, see Category 172.]

7: McKern

OU9 Tonga OU9

529

[For information on esi mounds and pigeon mounds used by the Tui Tonga as pleasure spots, see Category 345.]

7: McKern

OU9 Tonga OU9

333

[For further information on structural stone work, see the various 34 Categories.]